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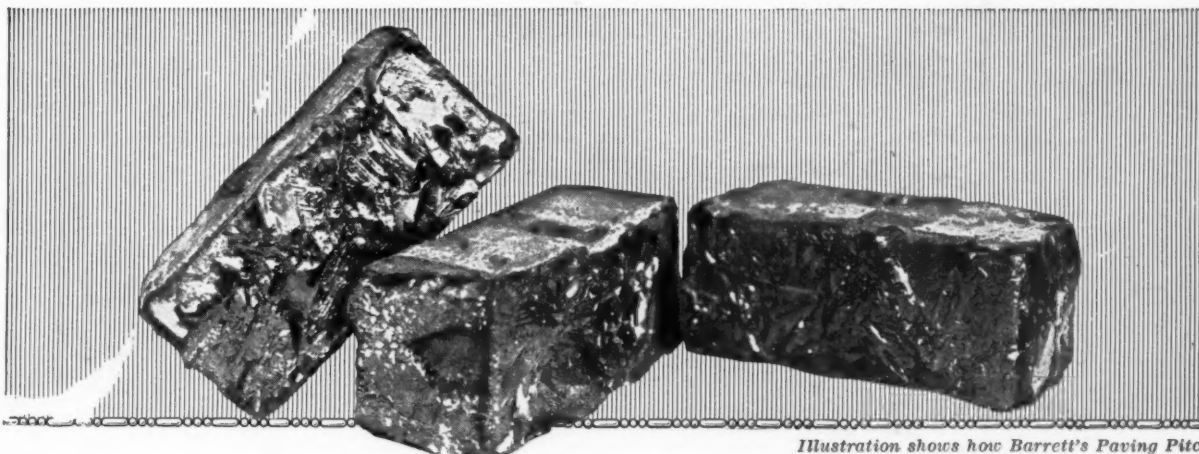


Illustration shows how Barrett's Paving Pitch clings to the block after many years of use.

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Municipal Journal

Volume XLIII.

NEW YORK, NOVEMBER 15, 1917

No. 20

LAYING IRON PIPE SEWER IN WHITE PLAINS.

Twenty-four-Inch Cast Iron Pipe Used Because of Ground Water—Trench Eight to Eighteen Feet Deep Dug With An Excavator, No Sheet piling Being Used—Tunneling Under Railroad.

By CARL P. ABBOTT.*

The city of White Plains, N. Y., is constructing a trunk sewer about 2½ miles long which will connect a valley running through the easterly portion of the city with the Bronx valley sewer where it passes through the northern section of the city. (The Bronx valley sewer receives and conducts to the Hudson river the sewage from all the communities in the valley.) A contract has been let for the first mile of this trunk sewer, and of this one-half mile is nearly completed and it is expected that the remaining half will be constructed next year. This section (which is that nearest to the Bronx valley sewer and forms the northern end of the trunk sewer) receives the flow from the Lenox avenue and Clinton street lat-

contract, about 2,700 feet, is all 24-inch cast-iron pipe, this material being decided upon because the sewer was laid in very wet ground at a considerable depth. Fortunately the city was not required to purchase the pipe, which at present prices would have involved a considerable outlay, but used iron pipe which had been used as a sewer in another part of the city and was discontinued because construction of the Bronx Parkway had rendered it unnecessary. This pipe also had been laid at considerable depth and in wet soil, and removing it required excavation, melting out lead joints, removing the pipe from the trench and refilling the trench. The pipe was then hauled between two and three miles from its old



VIEW OF TRENCH, LOOKING FROM TRENCHING MACHINE.

erals and ultimately will be carried south and connect with the Westchester avenue sewage pumping station, thus relieving the main sewers through the center of the city of a part of their present burden. A part of the right of way is across private property, and it was thought advisable to acquire a sufficient width of property to provide a street along the line of the sewer. This will furnish another and much-needed north and south thoroughfare on the east side of White Plains, where at present there is only one thoroughfare.

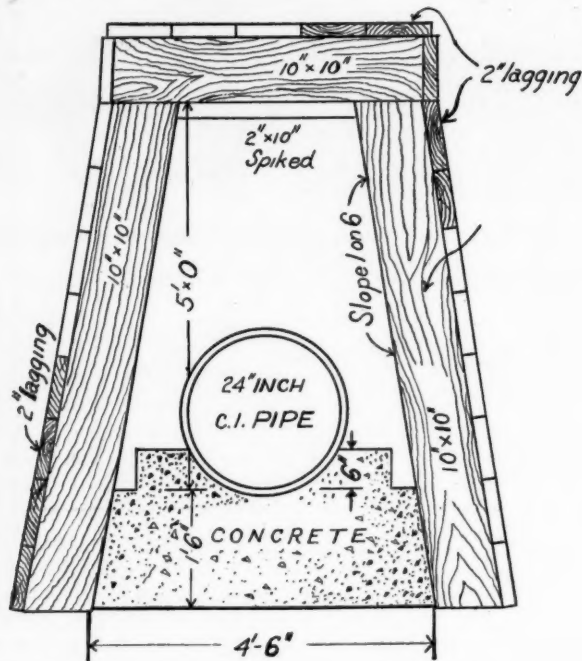
The section of the trunk sewer included in this year's

*Deputy Commissioner of Public Works, White Plains, N. Y.

location to the point where it was to be used. The removal and carting of the pipe was all done by the contractor who laid the trunk sewer, the price bid per lineal foot of sewer including the removal and carting of the pipe as well as the excavating for, laying and back-filling of the new sewer. In removing the old lead joints the contractor used a small oxy-acetylene torch for melting the joints and this work proceeded very rapidly. In relaying the pipes in the new sewer the joints were all run with leadite, which the contractor found would be much cheaper than if lead were used.

The half-mile of work which is now nearing comple-

tion consists of excavation in hardpan and a mixture of sand and clay, the depth ranging from 8 ft. to 18 ft., except that where the line passes under the tracks of the New York Central R. R. a tunnel about 150 ft. long is



PLAN OF TUNNEL LINING AND SETTING PIPE.
Bents spaced 4 ft. centers. Railroad Co. to determine amount of concrete used in case of bad bottom.

necessary. Just beyond the railroad is the Bronx valley sewer, into which this trunk sewer discharges. The Bronx valley sewer is about 25 ft. below the grade of the railroad tracks at this point, and the trunk sewer is carried under the railroad at approximately this depth, which makes the construction somewhat easier than if the depth had been less, since the deep tunnel construction is considerably easier than open cut under the railroad tracks. The material which is being tunneled through (about 30 ft. of the tunnel has now been excavated) makes the work difficult, since it is composed of large pieces of rock excavated in the construction of the Grand Central Station in New York, which was dumped on the site and is mixed and covered with cinders and loose dirt. Poling boards are being used in driving the tunnel and it is anticipated that they will be used for the entire length. The accompanying drawing shows the design finally approved by the railroad company, which is changed slightly from that originally proposed in order to make it conform with the railroad requirements.

The grade of the sewer is far below the water table throughout almost the entire length of the sewer and water was accordingly found in the trench at all points.

The engineers of the public works department had expected that construction would be carried on with the usual sheeted trench, and the contract provided for a payment of \$45 per thousand for lumber left in the trench. The contractor, however, decided to excavate the trench in open cut without bracing, using a Keystone excavator for that purpose. This method has been carried out very successfully and economically. The excavator digs the trench without difficulty to within about one foot of the invert grade, even at the deepest portions of the sewer. The shovel works backward, excavating the trench behind it. The excavating is done overhand with the bucket turned around, the material being deposited along both sides of the trench. The sides of the trench are allowed to assume their natural slope, which is about 1:1, and no sheeting is used, although occasional braces

are employed for holding up the top of the bank. Bracing was rendered especially necessary by the presence along one side of a part of the trench of a water main, as is shown in one of the illustrations. The contractor was fortunate in preventing the falling of this main into the trench with the consequent flooding of the trench; but he was not able to entirely prevent movement of the pipe, and after the trench had been filled it was found necessary to cut off this stretch of water main at the two ends of the section and remove it back into straight alignment.

After the excavator had dug the trench to within about a foot of the bottom, this remaining distance was taken out by hand, a length of bottom sufficient for laying one length of pipe being completed, this pipe laid to grade and the joint run, and the next 12-ft. length of trench excavated by hand, the dirt therefrom being cast back upon the length just laid. Following the laying of the main, the trench was back-filled by hand, the men so employed being used also for laying each succeeding length of pipe as the bottom was prepared for it. In all about 8 men were employed in the trench, in addition to two men who operated the excavator.

No provision was made for house connections to this trunk sewer, but another lateral sewer of ordinary sewer pipe will be provided for local service.

The contract price for digging up the 12-inch iron pipe, hauling it two or three miles, and laying it, including excavation and back-filling, was \$7.60 a foot. The price for the tunnel was \$57.20 per lineal foot, this including the securing and laying of the pipe as well as the excavation. There is a price of \$2 for rock, but so far no rock has been encountered. Manholes were contracted for at a uniform price of \$70 each. The contractor for the work was E. L. Erbeck, of White Plains. Plans were prepared by and the work is under the supervision of the department of public works of the city, of which Miguel L. Hauck is commissioner.



VIEW OF TRENCH, LOOKING TOWARD EXCAVATOR.

CITY PLANNING IN PASADENA

Progress Report of City Planning Committee—Balloting on Proposed Improvements—Municipal Railroad, Library, City Hall, Street Widening, Etc.

The City Planning Committee of Pasadena, Cal., was appointed in March, 1915, and a few weeks ago submitted its fifth detailed report of progress. It has been the aim of the committee (and probably these periodical reports are in line with such aim) to develop the popular sentiment as it goes, so that its final report when presented will find the citizens educated to an appreciation and, they hope, an acceptance of its recommendations. Among other features of this public education, it has asked the citizens to submit suggestions for improvements, and over 100 separate suggestions so made have been considered by the committee.

During the two years and a little over that the committee has been operating, it has made a complete physical survey of the city and has a series of maps and charts prepared to answer any question in regard to the topography, street lay-out, drainage, sewerage, paving, public lands, tree planting, water system, location of public buildings, transit lines, grade crossings, fire zones, apartments and hotels, churches, schools, play-grounds, parks, etc. It also has a complete set of charts showing the financial condition of the city, including its assets, its bonded indebtedness, its tax rates for a number of years past, and the actual amount raised by local taxation, the assessed value of both land and improvements, and the expenditures for maintenance and outlay in various departments. Much of this information has been shown on a basis of percentage to indicate growth, and sometimes the data have been reduced to a per capita standard to enable a comparison to be made with the corresponding figures from other cities. The committee is therefore in a position to know both what the city has at present and what it can afford in the future—two very important fundamentals of the preparation of an intelligent city plan.

The committee has endeavored to secure, by means of a straw vote or ballot, the consensus of public opinion as to the relative importance of the various proposed city planning projects. In the first balloting, 1,000 votes were cast to indicate the preference of the voters between various improvements. 10,000 points was the highest possible score, and the number of points varied from 5,687 for a new library and branches, to 2,656 for a union terminal, rapid transit to Los Angeles and the widening of Colorado street coming second and third in the list.

Some months later, in March of this year, a post card ballot was mailed to each of the 20,000 voters, and 6,330 of these were returned. Of these, 2,327 were for a municipal railroad, 1,653 for a new library, 441 for an auditorium, 397 for a civic center, 386 for widening Colorado street, 331 for Arroyo Seco Park, 267 for a new City Hall and 528 miscellaneous.

The civic planning committee is not in favor of doing "only one thing at a time." While recognizing that some improvements are more pressing than others, it believes that groups of citizens can take an interest in separate projects, working continuously on each enterprise and then, by cooperation through the City Planning Committee acting as a clearing house, the various parts of the general plan can be coordinated consistently.

Over 8,000 visitors examined an exhibit entitled "My City," during a period of eight weeks. In this exhibit were photographs of the best civic improvements and

also a "Slam Corner," showing the result of a photographic contest which exhibited some things in the city that were not so attractive. "Some of these blights have been removed, some—unfortunately—still remain, while others even now are being constructed."

A comprehensive plan for Pasadena is now in course of completion and is ready for a full discussion. This provides for improvements in transportation, parks and play-grounds, street system and civic center. Under the first head, all grade crossings on the trans-continental steam lines are scheduled to be eliminated. The industrial district is to be confined within certain limits and a terminal therein to be used jointly by all the steam roads. A high-speed double-track electric line to Los Angeles would be constructed terminating at this industrial district.

The striking feature of the park system will be 38 square miles of mountain area which includes Pasadena's water shed. Small parks are to be provided for each neighborhood and advantage is to be taken of the purchases of sites for four intermediate schools to secure sufficient ground for playground centers, branch library sites and social centers. The water-ways are to be utilized as natural parkways, using these diagonals throughout the city to maintain a contact with nature without a large expenditure. Odd-shaped pieces of land, sometimes called "remnants," are to be used as breathing spaces and beauty spots.

In connection with improvements of the street system, the committee has shown upon a map a rather surprising condition of land values, in that, within 1,000 feet of a piece of land valued at \$1,000 per front foot will be found other land valued at only \$50. The reason is lack of access to the cheaper land, and the condition illustrates quite forcibly the importance of a consistent street system.

The committee believes that the citizens are not ready at the present time, under war conditions, to take any actual steps toward a civic center, although a new library, new city hall and municipal auditorium are among the buildings for which some demand is indicated, and which should be planned to form a part of a civic center.

Pasadena lies within a basin of about 60 square miles in which also are located Altadena, So. Pasadena, San Marino, San Gabriel, and Alhambra. The automobile and good roads make this whole district a unit topographically, and the committee makes a plea for "neighborly development into one unified community." "We now have 60,000 people in the valley and it will be a comparatively short time when this district will furnish homes for 100,000 inhabitants. Let it be not a city in the generally accepted sense, but a great living district, so attractive in all its parts that the next 60,000 people to follow the 60,000 already here will be attracted to this community because it will be the best place in all the world in which to work and to live and to play."

STIMULATING DOMESTIC USE OF ELECTRICITY.

The municipal Electric Department of London, Ont., two or three years ago introduced the scheme of wiring houses on the installment plan. Eighty-three houses were so wired in 1915 and 115 houses in 1916. As a number of complaints were received regarding the prices which were being charged by local contractors for wiring, a specification and detailed schedule of material was prepared so that prospective customers might obtain bids from several contractors, on which the department would make recommendations to the customers. The general manager of the department, E. V. Buchanan, stated in

his latest report that if this plan did not result in obtaining fairer prices for the citizens, a regular wiring force would be organized by the department.

Electric cooking is reported to have proved a complete success as to both economy and excellence of the food cooked. Last year 225 electric cooking ranges were sold by the department and about 300 were in use in the city. The excess of the average electric bill over the ordinary lighting bill, which is believed to represent the electric cooking bill, was \$1.65 a month. In addition to the cooking ranges, the department sold more than 3,000 other electric appliances, about half of which were electric irons.

NEW YORK BUREAU OF FIRE PREVENTION*

Work Done by the Electrical Division, Division of Examiners, Division of Plan Room, and Recording Division—Education and Propaganda.

By ROBERT ADAMSON†

Electrical Division.—The Fire Commissioner is empowered to require the removal of fire hazards due to defective electrical conditions, and to order the installation of interior fire alarm systems in hotels, lodging houses, public and private hospitals or asylums, department stores, etc., and the installation of means of communicating alarms of fire to Fire Headquarters in similar classes of buildings. These may be sprinkler alarms, water alarms, automatic thermostatic alarms, or others. The bulk of this work is in the hands of the Electrical Division, which also makes inspections of electrical safety devices, such as those for elevator doors, of electrical pumps for volatile inflammable liquids, etc.

It is to be noted, however, that the supervision over electrical fire hazards is also in the hands of the Department of Water Supply, Gas & Electricity, so that conditions in the ordinary building are generally reported to that department in order to avoid duplication of inspection. The Fire Department retains jurisdiction over the protection of motors against sparking near volatile inflammable liquids and the protection of electric light bulbs under similar conditions.

Electrical inspectors are certified to the department from appropriate civil service lists and are usually men with electrical training but without special training with fire alarm signals. The new inspector receives this training in the department by assisting senior inspectors in testing alarm systems and by instruction in the electrical laboratory. When any new device is recommended for approval, it is carefully explained in a lecture before all inspectors, who make suggestions and criticisms.

Prior to the issuance of orders for the installation of a fire alarm signal system, the inspector visits the premises for the purpose of making a survey known to the trade as a "lay out." This contains all the information necessary for the owner to obtain estimates for the installation of the system. The layout is furnished to the owner free, and saves him architect's or contractor's fees for the preparing of a plan. It also eliminates checking up several contractors' plans for the same building at Fire Headquarters, necessary under the old system.

When the system is installed, an inspector is sent to test out each individual gong and station in the installation, as well as to examine carefully control boards, conduit, wire, connections, etc. The entire system must be subjected to exhaustive scrutiny. Similar tests and examinations are made of systems connecting with headquar-

ters. On sprinkler electrical inspections, the inspector tests the water-flow alarm, the high and low water indicating devices in connection with pressure tanks, as well as the conduit, wire work, etc.

The inspection of electrical wiring and equipment in hazardous risks involves a knowledge of the electrical code and in addition a knowledge of the properties of the gases or liquids involved in the risk.

The Electrical Laboratory is maintained for the purpose of testing the various fire protective or preventive devices of an electrical nature. It makes elaborate tests for inspectors which would be impossible in the field and also assists owners and contractors in cases where special treatment is involved. It acts, in addition, as test agent for the Industrial Commission of the State Labor Department.

During 1916, 1,168 interior fire alarm signal systems were installed in buildings in New York City by order of the Fire Department, a greater number than in any previous year. There were at the end of 1916, 1,738 approved systems in the city, almost all installed under this administration. Of these, 1,366 were in factory buildings, where the Fire Commissioner is required to order the installation under the mandatory provisions of the Labor Law. Of the 1,738 systems, only 23, or 1.3 per cent, were reported out of order at any time last year, and the majority of these were repaired by the inspector before he left the building.

Examining Reports and Issuing Orders.—The Division of Examiners receives reports and recommendations from inspectors and uniformed firemen and on the basis of these reports determines the necessity for orders to correct the violations recorded. All orders are carefully checked up with the reports before issuance. The division advises owners of the most economical method of complying with the law, and points out alternative methods in many cases.

The examiners are fire prevention inspectors or assistant engineers and are put through a special training to make them thoroughly familiar with the exacting requirements of the work. Under the present reorganized form of the division, there are two separate groups of examiners, one of which handles violations of the fire prevention laws and the other violations of the Labor Law.

Division of the Plan Room.—This division receives plans filed for buildings containing a combustible occupancy and plans for sprinkler and standpipe installations. In the former case, the plans must be approved by the Division of the Plan Room before a permit is issued by the Division of Combustibles. In the latter case, the plans must be approved before the sprinkler or standpipe system is installed. In examining combustible occupancy plans, the division goes into details regarding the installation of containers for combustible liquids in large quantities, such as oil and gasoline, and into such matters as the construction of vaults for nitro-cellulose products, including motion picture films.

Handling of Records and Correspondence.—The Recording Division of the Bureau of Fire Prevention has in its files in the main office approximately 150,000 active folders against premises; 12,000 folders a day go over the desk of the recording clerk in process of transfer; and about 300 letters are received each day.

For each address there is an owner's folder, containing orders and correspondence relating to the owner; and one or more occupant's folders. These are numbered and filed under record number. The folders are routed through the department by an endorsement sheet system. The endorsement sheet, filed on top of the papers, shows the name of the endorser, the person to whom the papers are to go, and the recommendation of the endorser. This sheet serves as a permanent record of the travels of the

*Concluded from page 447.

†Fire Commissioner, City of New York.

folder. The outside of the folder has a similar record, abridged for the messenger, who travels the rounds of the department four times a day. Each division in the bureau has a number and each division head a letter, for routing purposes.

A record is made at the charging desk of the destination of each folder before it is sent out. This is on a master record card, of which there is one for each address. By referring to the master record card, it is possible to determine where any folder is or was at any given date. The master record cards are filed under addresses.

The tickler system contains the folders on which replies are to be received. There is also a fifteen-day tickler system for all orders issued which mechanically insures their receiving proper attention; and a thirty-day tickler system for combustible permits. A separate synoptical record is kept of every order on a folder. This record makes a history of the case for reference in case a folder is misplaced. Separate copies of orders are also kept to be used by inspectors in making reinspections.

The Stenographic Division at present employs twenty-two typists and sends out about 250 letters and 80 orders a day. Mechanical methods of dictation are employed in the bureau, and this division handles daily about 30 cylinders received from twelve dictating machines.

Education and Propaganda.—In addition to the above activities, the Bureau of Fire Prevention has engaged in educational and propaganda work to a large extent. Statistical study shows that fully three-fourth of our fires, with the accompanying loss of life, invariably occur year after year where people live—in tenements, dwellings, and furnished room and boarding houses. The fire commissioner has little authority to enforce adequate preventive and protective measures in these buildings. In the absence of a system such as prevails in some European countries of holding tenants legally responsible for fire losses occurring on their premises unless it can be proven that the fire was not due to individual carelessness, we in this country can only endeavor to teach people to prevent fires. This is the reason for our constant efforts in the direction of education; efforts that must bear fruit more in the next generation than in this.

We have directed a great deal of attention to the children as the most likely element of the population to bring about a change in the future. "Fire Prevention Lessons," an illustrated pamphlet prepared under my direction, has been adopted by the Board of Education and is used as a text book throughout New York's public schools. The book has also been used as a basis for similar work in other cities throughout the country. As far as our facilities permit, we also maintain a lecture service and give illustrated talks on fire prevention to large public school audiences. Our collection of lantern slides on this subject is excellent; and we have in addition a three-reel motion picture drama, "The Locked Door," prepared under my direction. Each year thousands of "Fire Prevention Don'ts" pamphlets that we have had printed in English and in Yiddish, are distributed to audiences of both children and adults. We have lately secured the cooperation of charity organizations, settlements, and neighborhood associations in this work. We have erected one large fire prevention bill-board in a prominent location and hope to add more. The public press we have found most ready to cooperate in spreading fire prevention propaganda by means of timely stories and warnings. On Fire Prevention Day, October 9 of each year, we distribute thousands of posters and circulars throughout the city, hold a parade of illustrative floats, and engage in every form of propagandist activity that our ingenuity has been able to devise.

Our hope is that when the present generation of children grows up, they will have the simple lesson of preventing careless fires so thoroughly drilled into their habits of thought and action that they will make a far better record than the present generation of their elders.

ANOTHER LIBERTY BOND CITY.

Editor of Municipal Journal,
243 West 39th St., New York City.

Dear Sir:

In your issue of October 18th I noticed where Boston bought \$1,000,000 worth of Liberty Bonds. The citizens of that community ought to be congratulated on having officials with courage enough to back up good judgment. I consider that our Liberty Bonds are as good an investment as we can make, so we are simply making a good investment for our city when we purchase Liberty Bonds. But aside from that, at the present time it is our duty to put our money, or those of us who handle our citizens' money, into these bonds so that we might back up our government and our boys who are fighting for their country.

I am proud to say that our little city did the best we could to help our government by taking \$10,000 on the first loan and \$10,000 on the second loan. Had we been able to have taken more we would have done so. Considering the size of our city (14,000 population) I believe that we have done our share to help the cause.

Yours very truly,

J. B. MARMION,

Mayor, City of Houston Heights, Texas.

SPOOL ROLLER FOR CONCRETE PAVEMENTS.

Quite recently the first trial was made on the Pemberton-Lewiston road, New Jersey (see Municipal Journal for October 25th) of a new device for rolling the surface of concrete roads. This is called by the inventor a "Spool Roller," owing to its shape. The roll used in this test was a piece of wood turned from a piece of 8 by 8 yellow pine 19 ft. long over all and 4 inches less in diameter at the middle than at the two ends, the longitudinal section showing two arcs of circles each with a rise of two inches from its cord, thus giving a 2-inch crown to the 18-ft. roadway. At each end of the roller is left a dowel 4 inches in diameter and 6 inches long. Over each dowel is slipped a ring formed on the end of an iron rod used as a handle for pulling the roller. The two ends of the roller ride upon the side forms of the road. When drawn forward, the roller compresses the concrete and pushes ahead the surplus water and more or less semi-liquid mortar. This roller was devised by Frank Yocum, inspector of this road for the Portland Cement Association, to which association it was assigned. Mr. Yocum says that its chief purpose is to give a more compact and uniformly dense concrete and a true crown to the surface, but that it also saves labor in the surfacing of the concrete.



SPOOL ROLLER IN POSITION, RESTING UPON THE SIDE FORMS.

This is the latest of several devices for finishing concrete road surfaces which have been tried out during the past year or two, these including the use of long straight rollers worked from the shoulders of the road by means of long handles; lengths of hose, which are drawn over the surface; hinged board templets (described elsewhere in this issue), and one or two others which have been described in *Municipal Journal* during the past few months.

BOARD FLOAT FOR FINISHING CONCRETE STREETS.

In placing a two-course concrete pavement on 11th Street, Wichita Falls, Tex., a novel method of finishing was employed which gave most excellent results.

Two 1 by 6-inch boards, each equal in length to one-half the width of the pavement, were spliced so as to make a jointed plank, the length of which was equal to the width of the street. At each end of this was nailed a short piece of 2-inch stock so notched that the outer end rested on the curb and the bottom of the float was at



FINISHING WICHITA FALLS STREET WITH HINGED BOARD FLOAT.

the gutter grade. A hole was bored near the lower end of this at an angle of about 30 degrees. Wooden handles were inserted, as shown in the picture. A man at each end then pushed and pulled the float over the pavement, finishing in one operation the whole width of the street, the float being drawn across the surface as many times as was necessary to obtain the required evenness.

This process eliminated much of the excess water and gave an even surface, but one not as gritty as that produced by the belt finish.—*Concrete Highway Magazine*.

HANDLING EXPLOSIVES.

After November 15, any person in the United States found with explosives in his possession and who does not have a license issued by the Federal Government showing the purpose for which the explosives are to be used, will be arrested and may be fined \$5,000 or imprisoned for one year, or both. This announcement is of interest to city officials, since under the law the director of the Bureau of Mines is empowered to utilize the services of city police and all officials in any way charged with police duties to assist in the enforcement of the law.

The police of the cities of the country have already been organized for this work, headed by a commission of chiefs of police in the large cities, of which commis-

sion Major R. W. Pullman, Superintendent of Police of Washington, D. C., is chairman. The police are not only to look after the enforcement of the law, but are also to make thorough investigations of all dynamite outrages and fires in factories and warehouses, and report to the director of the Bureau of Mines. In addition to the city police, the director can also call upon state police, county sheriffs, deputies, constables, etc.

Under the law everyone who handles explosives must have a license. Manufacturers, importers and exporters must obtain federal licenses from the Bureau in Washington. Sellers and purchasers of explosives can obtain licenses from county clerks or other local officers authorized to administer oaths. Where the state law provides for issuing such licenses, the state officials authorized to issue them will be designated as federal licensing agents, and the same will be true of city officials authorized to issue such explosive licenses. Contractors and others using large quantities of explosives which are handled by employees may issue explosives only through an employee holding a license called a foreman's license. Only the citizens of the United States, or of countries friendly to the United States and the Allies, may obtain licenses.

ILLINOIS HIGHWAY BONDING PLAN.

The sixth annual meeting of the Illinois State Highway Improvement Association fired the opening gun of a campaign for votes for the proposition to issue \$60,000,000 of state bonds, which will come before the people for their decision in November, 1918.

The law submitting the proposition to vote was passed by the Legislature at its last session, together with others providing the means for paying the principal and interest of these bonds. In 1918 the automobile licenses will be increased 50 per cent and in 1920 by an equal addition, so that a small automobile now paying \$4 will pay \$6 a year after 1918 and \$8 after 1920. The present automobile fees are used in road maintenance and the same amounts from the new fees will continue to be so used, the additions to the fees being set aside for payment of interest and principal of the \$60,000,000 bond issue.

The bonds will be issued as they are required from year to year, and in the serial form now becoming popular, especially when the bonds are issued to pay for public improvements which have a more or less definite life, a fixed amount coming due each year until the whole amount is paid. It is proposed to fix the maximum limit of the loan at 20 years, which, if all were issued at once, would cause them to be paid at the rate of \$3,000,000 a year. But as they are to be issued each year in the amounts needed, the period of issue will be extended over possibly ten years, and so the period required for payment of the last of the bonds may be extended to 30 years, or even more, beyond the time of issuing the first of the bonds. The bonds of each annual series of \$6,000,000 (if they are issued uniformly at that rate) would be repaid at the rate of \$300,000 a year, and at the end of ten years the annual repayment of bonds would amount to \$3,000,000 a year, with a maximum payment of interest at 4 per cent, of \$1,860,000 a year. A very conservative estimate places the increase in income from automobile licenses at 10 per cent a year, this being very much less than the annual increases heretofore. Even this conservative increase in automobile license income places the project in the class of safe investments, with a few millions to give the repayment fund a good start, to be derived from the automobile fund from the beginning of 1918 until the date of the first repayment arrives, which will probably be three or four years. And

after 12 or 15 years the excess of the automobile license fund each year, over payments of principal and interest, will be sufficient to extend the amount of work to be done or to increase the appropriation for maintenance.

Illinois claims the invention of this method of raising the funds for building good roads, which has now been adopted or is under discussion by other states.

MAINTENANCE AND REPAIR OF IMPROVED ROADS

Brick Pavements, Bituminous Surfaced Concrete and Bituminous Macadam—Patrol System of Maintenance—Lessons from Ohio's Experimental Road.

By CHAS. C. BROWN.

This article follows in series an article in Municipal Journal in the number for September 13th, 1917, on the "Maintenance of Concrete Pavements," and is concerned with roads of the more permanent forms of construction, and does not touch macadam or gravel roads except as they are given more permanent surfaces in the process of maintaining them. Thus it is a common practice in Ohio to construct water-bound macadam roads according to a high-class specification and after a year or two of wear to give them a treatment with tar or asphalt, which materially improves the surface and promotes it to a higher class. This is but a variation of the best practice in constructing bituminous macadam roads by the penetration method.

BRICK PAVEMENTS.

Maintenance and repair expense on brick roads in country districts is on the whole so slight that it is scarcely necessary to prescribe methods for doing the work. The failures are so local and so definitely due to local conditions that the repairs must in any event be made by methods devised specially to fit the individual cases. This is indicated by the results of a recent inspection (August, 1917) of a test road built for the Ohio State Highway Department in 1912 and 1913, using several different kinds of bricks and several different methods of construction. These results may be classified as follows:

Fifteen sections of the pavement were laid with 4-inch, 1:3:6 gravel, concrete base and 2-inch sand cushion. One section was laid with 2-inch sand cushion on the natural clay sub-grade, well rolled with a 10-ton roller. The sand cushion was in all cases smooth, being leveled with a templet both before and after being uniformly compacted by rolling with a hand roller. In the first fifteen sections there are no difficulties traceable to the foundation. The sixteenth section is in very bad condition, some of it having settled irregularly, and some of it with almost regularly alternate bricks settled more than those adjoining. All the grout-filled joints are broken up except an area along one curb 1 to 2 ft. wide, and the bricks are broken and spoiled. It is evident that the only permanent repair needed in the pavement on account of the foundation is the construction of a permanent foundation under this 16th section, followed by a relaying of the bricks, with replacement of those too seriously broken to be used again.

Concrete curb, 5 by 10 by 15 inches, borders all sections except the east side of the 16th, which has an 8 by 8-inch curb put in after the brick had been laid and grouted. There is a 5-ft. earth berm on the west side and a 9 or 10-ft. earth drive on the east side. Apparently the curb was heavy enough to carry any pressure from expansion of the pavement as it seems to be straight and

solid. Sunken curbs were placed at each end of the brick area and have been sufficient to prevent any longitudinal motion, though there are no transverse expansion joints in the 500 feet length of cement-grout filled brick. Possibly the bad condition of the bricks in section 16 without concrete foundation, which is at one end of the brick pavement, is due to its inability to withstand the stress from expansion. The 300 feet of brick pavement at the other end had either asphalt or sand filler. The width of the pavement is 16 feet and there is a $\frac{3}{4}$ -in. asphalt expansion joint along each curb. This joint was not in all cases able to take up the expansion of the pavement, since along the curbs there is an occasional strip about 4 inches wide and 5 to 10 courses long which shows a crack and a crushing of brick and in two or three instances a tendency to lift next the curb. Nearly every section has one of these spots. These do not appear to be due to freezing and expansion of water under the spots, but the cracks and opened joints should be thoroughly filled with a bituminous filler which can fill them so as to prevent water reaching the sand cushion through them.

The joints in the first six sections, about 300 feet, are filled with an asphalt joint filler or with sand in alternate strips, the sand strips from 7 to 15 feet long and the asphalt strips from 30 to 50 feet long. Quite generally the sand-filled joints are not full and the edges of the brick are rounded by wear and in one section are chipped and spalled. The same can be said in less degree of the asphalt-filled joints. The indication is that the joints should be cleaned out as far down as the filler can be loosened with a sharp tool and swept out with a narrow, stiff wire broom, getting down into the joint, and then filled with a bituminous filler. The writer would recommend a mixture of sand and a rather soft asphaltic cement or tar, approximately one part by weight of each, less sand being used where it is particularly difficult to press the filler into the joints. The cement-grout joints are most of them well filled. All the sections but one are of repressed brick with rounded corners. In two or three sections there has been some pinching of the filler out of the joints, which has permitted some chipping of the brick, but these areas are very few and small. Some joints are in the shape of Fig. 1, showing



FIG. 1.

FIG. 2.

that the grout has not adhered to the rounded corners of the bricks, but is strong enough to hold the projection in the center. However, this projection can be broken off very easily by sidewise pressure directly upon it. In other cases the joint was in the shape of Fig. 2, indicating that the cement is wearing faster than the brick, but is still protecting the edges. In one section there is a crack about 3 ft. long and one about 1.5 ft. long. Otherwise the pavement is quite free of breaks except in the crushed spots near the curb described above. No repairs are required to these sections and none will be required under present conditions for many years. Filling of cracks which have developed any width with tar or asphaltic mastic, as recommended for open joints, is suggested.

When it really becomes necessary in the maintenance of a brick pavement to take up an area and relay it, the bricks should be carefully removed and chipped out so as to leave clean spaces and whole bricks, thus making it possible to join the patch intimately with the pavement with the toothing necessary to keep the bricks whole. It is common, when a sand cushion is used, to lay the patch slightly higher than the existing pavement, to allow for shrinkage of the cushion. But the full settlement allowed for seldom occurs and it is much better to consolidate the

cushion thoroughly and lay the surface of the patch at the same elevation as the existing pavement surface. The cement-sand cushion now becoming popular is particularly adapted to such patches. The filler for the joints of the patch should be the same as that in the pavement.

CONCRETE PAVEMENTS.

Several sections in the Franklin County experimental pavement were laid with concrete alone or with various sorts of surface reinforcement. In some points broken stone was used from various deposits of varying hardness, in some gravel was used and in others slag.

The plain concrete section was 457 ft. long, laid in blocks from 41 to 66 ft. long, with concrete of various mixtures from 1:1½:3 to 1:2½:4½, with stone of two degrees of hardness, and with gravel. Four of the nine blocks into which the pavement was divided by the expansion joints had longitudinal cracks. There are many small holes and one or two large ones on cracks. The concrete was not uniformly mixed and large stones show in considerable numbers in patches here and there. Maintenance has consisted in filling all holes an inch or more in diameter with bitumen as described in the preceding article of this series.

A two-course pavement 484 feet long, dry stone laid and grouted with cement and sand, wet mixture, has very uneven surface. Part of it is badly cracked, both longitudinally and transversely. Part of this cracking seems to be due to the fact that the base course in a part of the area was rolled into the soft, wet subgrade so that the mud filled the voids in the lower half of the layer. There are no expansion joints. It would seem that the only repair possible is to take up and relay the section which is cracked, correcting the errors in construction.

Three sections of concrete base were surfaced with different bituminous mixtures. In constructing one section the concrete base was covered with a 1:3 cement mortar ½ inch thick on which a 2-inch layer of 1 to 2-in. stone was placed and lightly tamped. After 10 days' setting and once rolling with a 10-ton roller, 1½ gal. per sq. yd. of asphalt binder was applied, then ½ to 1 in. stone, which was rolled, and a seal coat of ½ gal. per sq. yd. was applied and covered with limestone screenings and rolled. There was some tendency of the bituminous layer to roll during construction and the pavement surface is now very irregular, showing much tendency to roll in spots, there being no lengthy rolls except one near the south end. The bitumen is disappearing and showing the stone underneath. Patching by the addition of bitumen covered by fine stone has been done, but the surface remains very irregular. Two sections of concrete pavement were covered with thin coats of tar of different brands, but very similar characteristics. The amount of tar applied varied from 0.35 to 0.55 gal. per sq. yd., and a second coat of 0.30 to 0.35 gal. was applied to two small areas, after the first coat had been sanded and had time to set. The tar has worn off of much of both sections, the only portion intact being one which had received two coats of 0.35 gal. each. There is some further indication that the larger amounts of bitumen produced the most lasting coat, but these indications are very irregular, and much of the concrete is very nearly bare. There are very few areas of 10 square yards together without spots of bare concrete. Cracks in the concrete are most of them longitudinal and extend over more than half the length of the pavement in irregular locations. Repair can be made by treating the surface with hot tar, but the surface of the concrete is not greatly different from the plain concrete surfaces near by and may be left to the same action of traffic.

A number of sections, each about 400 feet long, were constructed of various kinds of macadam, using various materials, including asphalt macadam by penetration method, tar macadam by penetration method, water-bound macadam with Marion, Piqua and Columbus stone, water-bound macadam treated with lime, macadam treated with glutrin, all the preceding with broken limestone; also water-bound slag macadam and glutrin treated slag macadam. After four years, these varieties of construction were all repaired in the standard manner in use in Franklin county and used quite generally in Ohio State maintenance work, and the sections all received a coating of tar with stone screenings on its surface, serious irregularities in surface being removed by filling the low spots with bituminized small stone or screenings. Since this treatment, differences in the original construction must be searched for diligently in order to discover them, except that the slag sections are rougher and show more tendency toward complete destruction and doubtless require more expenditure for maintenance.

This indicates that the standard method of maintenance, properly applied, gives good results in maintaining surfaces, even to the extent of minimizing considerable differences in the quality of the original materials and methods of construction. Several specifications are used, presumably according to the necessities of the case, as follows:

Trinidad liquid asphalt A, 1/3 gal. per sq. yd., in one application;

Tarvia B, cold, 1/3 gal. per sq. yd., in one application;

Tarvia B, cold, ½ gal. per sq. yd., in two applications.

In each case a coating of stone screenings is applied after a few hours allowed for the bitumen to soak into the road surface and set.

When a road has worn so much as to require renewal, a 4-inch layer of bituminous macadam is put on, using 2½ gallons of high carbon tar, applied hot, with stone screenings on the surface, according to a standard specification.

The National road six miles west of Columbus, O., has a heavy automobile traffic, including numerous light motor trucks, as well as considerable hard-tire and horse traffic. It requires a treatment each year and some sections of the road would last longer and keep in better condition if the treatment were applied twice each year.

By the contract method of maintaining roads which is in vogue, all of a road receives treatment at the same time, and so bad places develop occasionally which rapidly spread and so hasten the time of resurfacing. Also these specially bad places do not receive the particular treatment which should be given them, and so, while they are improved, their deterioration is not stopped. The patrol system and immediate treatment of all bad spots as soon as they develop would materially improve the continuous condition of the roads. A single man with a small motor truck could cover many miles of road in a day. Possibly the patrol would cost more than the present method, even when the longer life of the road is taken into account; there are no data at hand to make the comparison. The patrol method is worth trying.

A source of waste in the present method is the excess of tar used in some places, due to more impervious surface, and the draining of tar off of the road bed at such places. More careful fitting of the amount of tar to the condition of the road would prevent this waste, but it would hardly be possible under the present wholesale treatment. Insufficient removal of the road dust before applying the tar is also an occasional source of inefficiency in treatment.

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A. PRESCOTT FOLWELL, Editor

W. A. HARDENBERGH and SIMON BARR, Assistant Editors
CHARLES CARROLL BROWN, Western Editorial Representative

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MUNICIPAL BONDS AND LIBERTY BONDS.

On another page will be found a letter from the mayor of a southwestern city that has purchased Liberty Bonds, in line with other and larger cities that have previously been named in these columns. Besides the cities already mentioned by Municipal Journal which have purchased Liberty Bonds with municipal funds, there are undoubtedly a considerable number of such instances which have not come to our notice. Among those of which we have learned and not already mentioned may be named Hagerstown, Md., which purchased \$20,000 worth with the balances in the city treasury standing to the credit of several accounts; and the county of Schuylkill, Pa., the sinking fund commission of which county purchased \$100,000 worth of the Second Liberty Bonds. Columbus, O., invested \$450 of the firemen's pension fund and Chicago \$2,000,000 of its traction fund in these bonds.

Although investors have put more money into Liberty Bonds this year than was ever before invested at any one time in any one country, the sale of municipal bonds has apparently not been very seriously affected thereby. It is true that during October numerous municipalities postponed bond offerings and investment dealers refrained from offering any new issues, which resulted in the sale of a little less than \$22,000,000 worth of bonds in October, which is about two-thirds of the average during the past seven years, about 40 per cent as great as the sale in October, 1916, and almost double the sale in October, 1914. Taking the ten months ending October 30, however, the sale of municipal bonds in 1917 was greater than in the same period of any year except 1916, when the sale was about 2 per cent greater. Prices of municipal bonds are reported by the "Bond Buyer" to have held up

well during the month and have even shown slight improvement over September quotations in the case of those issued by the larger cities; and that authority thinks it "probable that a demand for securities exempt from taxation will, between now and the opening of the third Liberty Loan offering, absorb all the new bonds that must be sold without unfavorably affecting selling values."

CONTRACTORS THE BURDEN BEARERS.

In an address before the American Road Builders' Association a few days ago, Edwin Duffey, commissioner of highways of New York State, expressed his appreciation of and sympathy with the contractors engaged in constructing highways in his state because of the unusual difficulties under which they had to labor this year. A large part of the work done this season was on contracts that had been let in 1916, before the adverse conditions as to prices and availability of both material and labor were anticipated. The result was that most of the contractors were required to pay much more for both labor and material than they had anticipated, and in addition found it extremely difficult to keep constantly on hand a sufficient amount of material and force of labor to maintain uninterrupted construction. This meant a financial loss not only because of the higher prices paid but also because the interruptions caused by the delays in delivery of materials interfered with the economical prosecution of the work.

The state highway department found the condition of affairs annoying and the delays subjected them to considerable criticism, while the removal from their force of scores of their best men for service in the army still further increased their difficulties; but Mr. Duffey realized that these troubles were not nearly so serious as those borne by the contractors, and that the latter were the real bearers of the burdens imposed by the war, so far as highway construction is concerned.

In still another way has a burden been heaped upon their shoulders, however. The contracts in New York, as probably in all states, provide that a material percentage of the contract price (that in New York State being 10 per cent) must be retained until after the entire completion of the contract. Owing to delays which were entirely beyond the control of the contractors, and added to their expenses rather than being a means of economy, a considerable percentage of the contracts which would otherwise have been completed this year must now be carried over to next year, especially since orders recently sent out from Washington prohibit the transportation by rail of any road-building materials until after the end of the road-building season. This means that this 10 per cent must be retained from the contractors during the winter and until such times as conditions next year may permit of the completion of their contracts; thus depriving the contractors of the interest on this sum and also of the use of the money for paying this year's bills for labor and material, which bills are much higher than anticipated.

As Mr. Duffey stated, the law holds the officials responsible for retaining this percentage, and until they receive legal authority to do so they cannot turn over this sum to the contractors. In England and other European countries, after the outbreak of the war, the unusual financial conditions were recognized and those upon whom they bore hardest were relieved of certain obligations by government enactment. Would it not be possible for the state governments to recognize the unusual burdens imposed upon contractors by these retained percentages and in some way to return a considerable part

of this, retaining only sufficient to insure the completion of the contracts by the contractors next year? In view of the considerable loss which many of the contractors have already sustained and the fact that in the majority of cases delay in the completion of the contract was

due to causes entirely beyond their control and unforeseen by them, such action on the part of the state would appear to be no more than justice to those who, as Mr. Duffey stated, have been the real bearers of the burdens this year so far as highway work is concerned.

FIREMEN'S PENSIONS AND BENEFITS

Tabulation of Data Contributed by Fire Chiefs Covering These Points—Schools of Instruction for Firemen—Building Inspection by Firemen.

The tabulated matter given below is the first installment of the third of seven tables (the first two having appeared in last week's issue) in which we are presenting information concerning about six hundred cities fur-

nished for this purpose by the fire chiefs. The remainder of this table and the other three, which give statistics concerning the fire apparatus in service, will appear in successive issues of Municipal Journal.

TABLE NO. 3.—PENSIONS AND BENEFITS. INSTRUCTION AND INSPECTION.

City and State.	Have firemen benevolent or similar organizations?	Is there a pension fund?	What proportion does city contribute?	In case of accident, who pays the award?	What percent. is paid by city and what by association?	Is there a school or other organized instruction?	Do men inspect bldgs. to learn conditions?
Alabama							
Brewton	No.....	No.....	.....	City .....	.....	No.....	No.
Gadsden	Yes.....	No.....	\$25	Fire dept.	None.....	No.....	Yes.
Huntsville.....	Pay of sick or injured	.....	fireman goes on	.....	.....	.....	Yes.
Selma	No.....	No.....	.....	.....	.....	Yes.....	Yes.
Arizona							
Bisbee	No.....	No.....	.....	.....	.....	Yes.....	Yes.
Douglas	No.....	No.....	.....	City .....	.....	No.....	Yes.
Phoenix	No.....	Volunteer	Nothing.....	Volunteers .....	.....	Yes.....	Yes.
Arkansas							
Little Rock	Yes.....	No.....	None.....	Local organization	City pays sal'y	No.....	Yes.
Prescott	Yes.....	No.....	.....	.....	.....	Yes.....	Yes.
California							
Alameda	Yes.....	Yes.....	None.....	Relief Association .....	.....	No.....	Yes.
Berkeley	No.....	No.....	.....	City under State Compensation Act.....	.....	Drill tow'r	Yes.
Bishop	No.....	No.....	None.....	.....	.....	No.....	Yes.
Hayward	No.....	No.....	.....	Surety Co.....	.....	No.....	Yes.
Modesto	Yes.....	No.....	.....	City.....	65% of salary	.....	Yes.
Monrovia	No.....	No.....	.....	State Comp. Act.....	.....	Instructed by Chief	Yes.
Palo Alto	Yes.....	.....	About \$500	State Comp. Act.....	.....	No.....	Yes.
Pasadena	Yes.....	.....	.....	City pays half salary..	.....	.....	Yes.
Petaluma	Yes.....	No.....	.....	City.....	.....	.....	.....
Pomona	Volunteer	No.....	.....	City pays salary.....	.....	No.....	Yes.
Redlands	No.....	No.....	.....	City.....	.....	.....	Yes.
Richmond	No.....	No.....	.....	City under Comp. Act..	.....	.....	.....
Santa Barbara	No.....	No.....	.....	City under Comp. Act..	.....	No.....	No.
Santa Ana	No.....	No.....	.....	City.....	All by city...	No.....	Yes.
Santa Monica.....	Yes.....	No.....	.....	.....	.....	Yes.....	Officers.
Stockton	No.....	Yes.....	2% of wages..	City.....	.....	No.....	Yes.
Watsonville	No.....	No.....	\$500 per year to volunteers..	.....	.....	No.....	Yes.
Colorado							
Colorado Springs	Yes.....	Yes.....	\$1,000 yearly..	City pays salary for 3 months. Pension fund all rest .....	.....	Yes.....	Yes.
Grand Junction	No.....	Will be Jan. 1..	Nothing.....	.....	All by state..	Yes.....	Yes.
Trinidad	Yes.....	Yes.....	20%	City, under State Act..	.....	Yes.....	.....
Connecticut							
Bridgeport	Yes.....	Yes.....	All.....	State Assoc.	All.....	Yes.....	Yes.
Danbury	Yes.....	No.....	.....	City and State.....	50-50.....	No.....	Yes.
Greenwich	No.....	No.....	.....	State assn.....	.....	.....	.....
Hartford	Yes.....	Yes.....	99%	Full pay and med. att..	.....	Yes.....	Yes.
New Britain	Yes.....	Yes.....	\$1,000.....	City.....	City 83%, firemen 17% ..	.....	Yes.
New Haven	Yes.....	Yes.....	5% of liquor licenses.....	City.....	.....	Drill sch.	Yes.
Torrington	Yes.....	No.....	9%	Insurance Co.	All by ins. co..	Yes.....	Yes.
Waterbury	Yes.....	Yes.....	None.....	City and assn.....	Full pay by city, \$2 daily by assn.	No.....	No.
Wethersfield.....	.....	.....	.....	Assn.....	All by assn...	No.....	No.
District of Columbia							
Washington	Yes.....	Yes.....	50%	Assn.....	All by assn...	No.....	Yes.
Florida							
Lakeland .....	.....	.....	.....	.....	.....	Some drill	Yes.
St. Augustine.....	No.....	No.....	.....	City .....	.....	No.....	Yes.
St. Petersburg	No.....	No.....	.....	City .....	.....	No.....	Yes.
Sarasota	No.....	No.....	.....	City.....	.....	Yes.....	Yes.
W. Tampa	No.....	No.....	.....	City.....	Salary	No.....	No.
Georgia							
Athens	No.....	No.....	.....	City .....	.....	No.....	Yes.
Atlanta	Yes.....	Yes.....	None.....	Members	All by assoc..	Yes.....	Yes.
Brunswick .....	.....	.....	.....	City .....	.....	No.....	Yes.
Carrollton	Yes.....	No.....	.....	.....	.....	Yes.....	Yes.
Moultrie	No.....	No.....	.....	.....	.....	No.....	Yes.
Newnan .....	.....	.....	.....	City pays salary.....	.....	.....	.....
Rome	Yes.....	No.....	Salary	City.....	City salary; assn. \$10 wk.	Yes.....	Yes.
Valdosta	No.....	No.....	.....	.....	.....	.....	Yes.
Idaho							
Boise.....	Yes.....	City pays salary, though there is no law compelling it.	.....	.....	.....	.....	Yes.
Pocatello	No.....	No.....	.....	.....	.....	No.....	Yes.
Illinois							
Aurora	Yes.....	Yes.....	2%	City.....	Assn. pays for sickness .....	.....	.....
Belvidere.....	No.....	No.....	City pays sal'y	.....	.....	No.....	Yes.

TABLE NO. 3—PENSIONS AND BENEFITS. INSTRUCTION AND INSPECTION.—Continued.

City and State.	Have firemen benevolent or similar organizations?	Is there a pension fund?	What proportion does city contribute?	In case of accident, who pays the award?	What percent is paid by city and what by association?	Is there a school or other organized instruction?	Do men inspect bldgs. to learn conditions?
Illinois (Continued)							
Bloomington	Yes	Yes	1% insur. tax.	City		No	Yes.
Cairo	No	No		City		No	Yes.
Champaign	No	Yes	State Indemnity Assn. and Ill. Firemen's Assn. pay \$2 daily			Yes	Yes.
Charleston	No	No	State Indemnity Assn. and Ill. Firemen's Assn. pay \$2 daily			No	
Chester	No	No	State Indemnity Assn. and Ill. Firemen's Assn. pay \$2 daily			No	Officers Monthly.
Chicago	Yes	Yes	By taxation	City one year		No	Occasionally.
Chicago Heights	No	No	City pays salary			No	Yes.
E. St. Louis	Yes	Yes	1% of licenses.	City		No	In bus. dist.
Elgin	No	Yes	1% of licenses, 2% of foreign insurance and 1% of firemen's salaries			No	
Evanston	No	Yes	3/10 mill.	Pension fund	Half pay	No	Yes.
Highlands	Yes	Yes	1/2	Ill. Firemen's Assn.		No	Yes.
Joliet	Yes	Yes	1% licenses	Ill. Firemen's Assn.			Yes.
Macomb	Yes	Yes		Ill. Firemen's Assn.	All by assn.		Yes.
Murphysboro	No	No		City		No	Yes.
Pana				City and Illinois Firemen's Assn.		No	Yes.
Paris			1.50 assessmt.	City and Illinois Firemen's Assn.			Yes.
Paxton	Yes	No		City and Illinois Firemen's Assn.		No	Yes.
Pekin	No	No		City and Illinois Firemen's Assn.		Yes	Yes.
Waukegan		Yes				Yes	Yes.
Witt				Ill. Firemen's Assn.		Yes	Yes.
Woodstock	No	No					
Indiana							
Anderson	Yes	Yes	1/10 mill.	Insurance Co.		No	Yes.
Decatur	No	No		City		No	Yes.
Elkhart	No	No		City		No	Yes.
Frankfort	No	No				No	No.
Garrett	No	No				No	No.
Gary	No	Yes	1/20 mill.	Pension fund	Depends on rank	No	Yes.
Jasper	No	No		City		Yes	Yes.
Kokomo	No	No		City	City pays sal'y	Yes	Yes.
Lafayette	No	Yes	1c. tax.	City	City pays sal'y	No	Yes.
La Porte	No	No				Yes	Yes.
Lawrenceburg	No	No				No	Chief.
Plymouth	No	No					Yes.
Portland	No	No		City		No	No.
Richmond	No	No				No	Yes.
Shelbyville	No	No				No	Yes.
Sullivan	No	No				No	No.
Terre Haute	No	Yes	1/10 mill.	City		No	Yes.
Vincennes	No	No				No	Yes.
Wabash	No	No		City		Yes	Yes.
Warsaw	Yes		\$1 a day	City and company	66%	No	Yes.
Washington	No	No		City		No	Yes.
Whiting	No	No				No	Yes.
Iowa							
Burlington		Yes	One-tenth	City	City pays sal'y	No	Yes.
Cedar Rapids	No	Yes	1/4 mill.	City	All by city	Yes	Yes.
Council Bluffs		Yes	1/2 mill plus 1% of salaries				
Davenport	Yes	Yes	1/4 mill.	City pays salary 1 year		Yes	Yes.
Denison	No	No				No	No.
Fairfield	No	No	Insurance Co.			No	Yes.
Grinnell	No	No				No	No.
Keokuk	No	Yes	1/10 mill.	Fund pays 1/2 salary		No	Occasionally.
Le Mars		Yes					
Marion		Yes	\$600	Benefit fund		Yes	Yes.
Mason City		Yes	20%	City		Yes	Yes.
Muscatine	No	No	City pays 1/2 salary 4 weeks in case of accident or sickness				Yes.
New Hampton	No	No		City			Yes.
Oelwein	No	No					Yes.
Sioux City	No	Yes	All but 1% of salary, etc.	City			Yes.
Washington	Yes	No					Yes.
Waterloo		Yes	1/10 mill on taxes	City pays salary for 3 months			Yes.
Kansas							
Cherryvale	No	No		Insurance Co.		Yes	Yes.
Fredonia			All from State fund				
Holton	Yes	Yes		Relief Assn.		Yes	Yes.
Independence	No	No		Relief Assn.		Yes	Yes.
Kansas City	Yes	Yes	All	Relief Assn.		No	Yes.
Newton	Yes	No	Salary	Relief Assn.		No	Yes.
Olathe	Yes	No		Relief Assn.		No	Yes.
Parsons	Yes	No		Relief Assn.		No	Yes.
Topeka	Yes	Yes		2% tax on foreign insurance companies		Yes	Yes.
Kentucky							
Harrodsburg	No	No				No	Yes.
Henderson	No	No	Salary	No pay		Yes	Yes.
Hopkinsville	No	No					Yes.
Lexington	No	No				Yes	
Russellville	Yes	No		All by city		Yes	Yes.
Louisiana							
New Orleans	Yes	Yes	1%	Pension fund		Yes	Yes.
Maine							
Augusta	Yes	No		Assn.		No	No.
Biddeford	Yes	No		Assn.		No	No.
Dexter	No	No				No	Yes.
Portland	Yes	Yes		Relief Assn.	All by Assn.	No	Yes.
Rumford	Yes	Yes		Relief Assn.		No	Yes.
Skowhegan	No	No				No	Yes.
Maryland							
Baltimore	Yes	Yes	All	The City	All by city	Yes	No.

The WEEK'S NEWS

Road Material Embargo Hits California—Traffic Relief Viaduct in New York City—Milk Supply Control in New York Municipalities—The Passaic Valley Sewer Delays—Water Waste in Niagara Falls—Big Factory Fire in New York City—State Fire Prevention in Illinois—The California Red Light "Abatement" Law Held Constitutional—Election Results in Many Cities—Votes on City Manager and Commission Government—Baltimore to Draft New Charter—Developing the Waterfront of Philadelphia.

ROADS AND PAVEMENTS

Appropriations for Freeing Bridges Available.

Trenton, N. J.—Appropriations made by the last legislature for the fiscal year beginning November 1, 1917, have now become available and in these sums is included the \$100,000 for freeing of bridges spanning the Delaware river between Trenton and Water Gap region. This sum, with \$100,000 appropriated last year, makes \$200,000 of New Jersey money available at this time for free bridges. A like amount is available from the Pennsylvania state treasury, making \$400,000 in all with which the New Jersey and Pennsylvania Joint Free Bridge Commission has to start its work of freeing toll bridges. The Joint Commission, of which Governor Brumbaugh of Pennsylvania is chairman and John A. Campbell of this city is vice chairman, has about completed negotiations for the purchase of the Pennsylvania Railroad Company's bridge at Bridge street, Trenton. It is understood that \$200,000 will be paid for this bridge and that it will be made free in the course of a month or two. Negotiations are also pending for purchase of the bridge between Point Pleasant, Pa., and Byram, N. J. These two bridges and possibly one or two more will be bought with the \$400,000 in hand.

Protests Against Embargo on Road Materials.

Sacramento, Cal.—The state highway commission has protested against the federal embargo on the use of open cars for the transportation of building materials, particularly rock, gravel and cement, as a serious detriment to road construction. In support of this contention the commission has telegraphed to vice chairman A. F. Naftzger of the State Council of Defense, San Francisco, and Robert S. Lovett of the War Industries Board at Washington, requesting that the impediments be removed so far as the requirements of the state highway work are involved. This new element entering into the already serious situation as it relates to increased cost of materials, car shortage and scarcity of labor, has brought the highway commission face to face with a serious problem, which threatens to cause a suspension of some of the most important construction work now under way or about to be commenced. The letter to the State Council of Defense says: "The state highway work of California will be most seriously embarrassed and indeed brought almost to a termination. Not only will the contractors engaged upon contracts, aggregating about \$4,000,000, be put to great pecuniary loss, but much of the great road program upon which the state is engaged will have to be postponed indefinitely. We feel that this work, which is manifestly of great importance to the nation as well as to the state, should not be impeded and request that as the head of the State Council of Defense you do all in your power to secure the removal of the embargo as far as the requirements of the state highway work are involved." The letter to the War Industries Board says: "If war necessity demands this embargo without exception we cheerfully acquiesce and the government can count on California in this as in all other crises. Before determining such a necessity please take into consideration the peculiar situation in California. This embargo will practically terminate our activity. Not only will the contractors engaged upon contracts aggregating about four million dollars be put to great pecuniary loss, but much of our great road

program, vital not only to the state but to the nation, will be indefinitely postponed. Since January 1st we have examined and reported on twelve thousand miles of roads of possible military value. The roads we are now building and which are imperiled by this embargo are the backbone of the road system between the Sierras and the sea on a thousand miles of unprotected sea coast and connecting with the transcontinental road arteries. If these considerations are of weight we ask for an exception."

Convict Road Work in Missouri County.

Mineola, Mo.—The first state road camp in Missouri, using honor men from the state prison, has been established at Mineola, Montgomery county. Governor Frederick D. Gardner has continually urged the use of state prisoners in the construction of better roads throughout Missouri. Montgomery county was the first county to make formal application to the state highway department and the state prison board for the use of prison labor in road work. The Mineola special road district had voted bonds to pay one-half the cost of constructing the eight-mile link of the National Old Trails road within the district, and, finding it impossible to secure local labor, induced the county court to make formal application for thirty men from the state prison to assist in the work of construction. Twenty-five of these men are employed on the road, and five of them are detailed for cooking, laundry work, etc., about the camp. The road district pays the state prison board \$1.25 per day for each man actually engaged in road work, and the state highway department will reimburse the district for one-half this amount as the work progresses. The money paid for the men actually employed on the roads covers the expense of housing, boarding and transporting the entire camp, and also includes the salary of a foreman supplied by the prison board, the services of the men required to maintain the camp, as cooks, etc. Warden Gilvin, of the state prison reports that 500 men now available for road work, and all counties desiring to obtain their services should make formal applications to the state highway department and state prison board through their county courts. The men will be furnished upon the same terms as those supplied to the Mineola road district. The honor system is used exclusively in working the men at Mineola. They work without guards and are not dressed in stripes. The camp is sanitary and attractive, and is lighted by electricity from a small plant. Bathing facilities are supplied. The food is plentiful and wholesome, much of it being obtained locally. Newspapers and magazines are provided, and the entire surroundings made as attractive and agreeable as possible. These honor men have been found honest and energetic; they perform a faithful day's work, and show a keen appreciation of the confidence manifested by the state department in them.

Big Street Viaduct to Relieve Traffic Congestion.

New York, N. Y.—Actual work has begun on the construction of a new viaduct, long desired, connecting 40th street and Park avenue with the roadway on the upper level of the Grand Central terminal. It will be two blocks in length, 36 feet wide, and will connect with the Grand Central roadway, which has a width of 40 feet. An appropriation of \$587,000 was made by the Board of Estimate, partly under the last administration, on the initia-

tive of George McAneny. It is expected to relieve the congestion of traffic in Park avenue, Madison avenue and Fifth avenue. In the further development of Park avenue all conflicting interests have been satisfied and arrangements have been concluded to build a ramp on the easterly side of Park avenue from 32d to 34th street, which will about double the traffic facilities of that section. At 32d street and 4th avenue all the traffic is now congested into a single roadway and relief at this point is absolutely necessary. For years there has been contention, but finally a satisfactory plan has been approved at comparatively small expenditure on the part of the city and also at a very reasonable cost to private owners. The traffic increase in the neighborhood of 42d street has been most remarkable during the last eight years. On 5th avenue the increase from 1908 to 1917 is nearly 100 per cent. This is due largely to the more rapid movement of vehicles on account of general use of automobiles. In connection with the roadway on the upper level of the Grand Central Terminal, this viaduct will carry the public around the westerly side of the station between 40th and 45th streets. There has been considerable delay in beginning this work on account of the construction of a subway connection between Park avenue and Lexington avenue. The foundations of the viaduct are intimately related to the subway structure; in some cases, resting upon its roof. The viaduct will add materially to the architectural development around the Grand Central Terminal. It will give a much more finished appearance to the station when viewed from the south. It is to be hoped that the eastern driveway around the Grand Central Terminal will also be opened up so that all the traffic going north and south may not be congested in the one thoroughfare. When a few years ago the city made an agreement with the New York Central Railroad for the Grand Central Terminal improvements, it was probably not realized that this early need by the city for the use of Depew place as a traffic artery would develop. With the opening to traffic on the Park avenue viaduct, on the additional roadway at 34th street and Depew place, the congestion in the vicinity of 42d street, Grand Central Station and Fifth avenue will be materially relieved.

SEWERAGE AND SANITATION

Publication of Milk Score Reports.

Hartford, Conn.—The State department of health recently issued the following statement on the publication of ratings for milk supplies: "The publishing of the reports of laboratory analyses of milk in daily newspapers has been done by health officers with good intentions, but it is the opinion of this department that such reports are likely to do an injustice to milkmen, for the reason that accidental conditions may at times, make it appear that their product was generally bad. If health officers desire to publish ratings, we would suggest that nothing less than an average report of at least six samples be published. The best use the health officer can make of the reports on milk samples is to use them for correcting bad conditions. For instance, if a milkman has been running low in bacteria count and a sample or two shows a high count, it indicates that there are conditions needing correction and the health officer should assist the milkman in locating the trouble rather than publishing a poor record without action. Publicity has its place, but publicity should in milk inspection follow co-operation."

Control of Milk Supply in New York Cities.

Albany, N. Y.—A preliminary report on bacteriological work in cities of New York state, covering about half of them, has been sent out by W. P. Capes, director of the State Bureau of Information of the State Conference of Mayors. The data shows that out of twenty-six cities upon which a report is made, only five or six make no attempt to ascertain what kind of milk is sold within their limits. The places where milk is sold without any information available as to whether it is pure are Oswego, Hudson, Johnstown, Kingston and Plattsburgh. All of the larger and more progressive cities of the state

either maintain separate departments or contribute to county laboratories where all bacteriological work is done. Still others get their examinations made at laboratories in their vicinity at so much per count. In the preliminary report, Mr. Capes names these cities as among those who have their milk tested: Albany, Amsterdam, Auburn, Batavia, Binghamton, Buffalo, Canandaigua, Cortland, Fulton, Lackawanna, Little Falls, Mount Vernon, Newburgh, New Rochelle, Niagara Falls, North Tonawanda, Olean, Oneida, Rochester, Rome, Saratoga, Schenectady, Sherrill, Syracuse, Troy and Utica. All of the larger cities of course have elaborate departments which examine for adulterants, cream, milk, coal, misbranded food, etc. Amsterdam pays a city bacteriologist \$800 a year. Auburn pays one \$1,750; \$1,000 from the health department and \$750 from the water department. Binghamton pays \$700 a year. Canandaigua reports that there is a county bacteriologist who receives a salary of \$1,500 a year and is allowed to do outside work. Cortland has its work done at the Cortland Normal, while Fulton sends its samples to the Syracuse municipal laboratory at a cost of seventy-five cents a count. Little Falls sends its milk to a Utica bacteriologist. Niagara Falls pays its officer \$1,000 a year and the expenses of its laboratory are \$1,200 a year—a total cost of only \$2,200 for this highly important work. Syracuse pays its expert \$2,000 a year and the total cost of the laboratory is \$5,450. Utica pays \$1,000 and the other expenses are about \$1,000 exclusive of the salary of the helper, who is also an inspector in the health department.

Completion of Passaic Valley Sewer Postponed.

Newark, N. J.—Completion of the Passaic Valley sewer is not now expected before the spring of 1919 despite the plans and hope of the sewer commission to have it ready by December 31 of next year, the time set for finishing the work. Adrian Riker, counsel for the commission, made this statement in an official pronouncement covering the history of the construction made before representatives of all interested municipalities who were the guests of the sewer commission on an all day tour of inspection. The delays were explained, unexpected obstacles encountered in the work were enumerated and detailed data on the cost presented, showing why expenditures had climbed high above the original estimate of \$11,500,000, and is now placed at \$15,500,000. However, Mr. Riker explained, amounts to be paid by additional municipalities coming into the league will so reduce pro rata assessments on the fifteen original municipalities in the contract that the cost to these fifteen will not exceed \$12,000,000, and may fall to the \$11,250,000 originally fixed. "The date of completion and commencement of the operation of the works is dependent upon the construction of the tunnel section beneath New York Bay," said Mr. Riker. "Completion of all other work can be timed, so far as engineering considerations are concerned, to coincide with the completion of the tunnel work. It is reasonable to anticipate that the outfall tunnel and terminal chamber can be ready for operation as early as the spring of 1919, provided that the terminal chamber be placed under contract within the next four or five months. Fully a year will be consumed in arranging for the interception of the municipal sewers. These connections should be constructed during the coming season."

Referring to the estimated cost of \$11,250,000, made by the members of the commission acting in 1908, Mr. Riker said: "In estimating the probable cost of the project they had the advice and relied upon the experience of Messrs. Hering and Fuller and of E. W. Harrison, all eminent specialists in the designing and constructing of large sewerage works. Upon the data available to the engineers and the commissioners I think I can state confidently that the estimate of the cost of the project was justified. When five of the municipalities in the district declined to join in the contract for the construction of the sewer the plans and specifications were modified, as required by law, and it was then estimated that the modifications made would reduce the cost of the enterprise to the sum of \$11,250,000. Actual experience in the construction of the sewer has demonstrated that the reduction in the cost of the sewer by reason of the modifications in the plan

was in fact overestimated to a large extent; but in any case it has since been fully demonstrated that at no time after September, 1911, has it been possible to construct the works as specified in the contract for less than \$13,500,000. Between June, 1916, and June 1, 1917, when the supplemental contract was executed by the fifteen municipalities, the world calamity of war involved the United States, with the result that the cost of labor and material and of construction work generally has advanced in many cases as much as 100 per cent. Assurances given in the summer of 1916 as to the maximum cost of the completion of Section 2 failed of realization. In the summer of 1917, the lowest actual bid was about \$1,000,000 in excess of the maximum indicated in the summer of 1916. The rest of the work still uncontracted for was estimated in 1916 to cost approximately \$1,000,000. At this time, because of the war conditions now existing, it is not safe to estimate the cost at less than \$2,000,000. It has, therefore, become necessary for the commissioners to ask the municipalities to make a further appropriation of \$2,000,000, or in all, \$15,500,000. So far as the fifteen municipalities which executed the original contract are concerned, if the other municipalities within the district which have applied for admission to the sewer shall be admitted their contribution to the cost will be at least \$2,500,000. There are also to be credited to the fifteen contracting municipalities interest on deposits received by the commissioners, and interest on installments delayed in payment, which will, together, amount to over \$900,000; with the result that the total capital payments by the fifteen municipalities parties to the original contract will not greatly exceed \$12,000,000. There still remains the Town of Montclair, which is located within the district, and which has not as yet signified any desire to join in the intercepting sewer project. If it should at any time hereafter conclude to do so and shall be admitted, its contribution to the cost of the sewer will be sufficient to reduce the payments by the fifteen municipalities to approximately \$11,250,000, the amount of the original estimate. While the excess of the construction cost over the original estimates in this case is unfortunate and a matter of sincere disappointment to the commissioners and every one else concerned, it is in fact not a bad showing when consideration is given to the changed conditions since 1910."

In their tour the mayors and commission took in the pumping station and sedimentation basins on the meadows and the immense tunnel to the point of discharge in New York Bay. The party included sewerage commissioners Bernard W. Terlinde, James P. Logan, Dr. Frank J. Van Noort, James G. Blauvelt and Robert E. Torrance, chief engineer William M. Brown, assistant engineers William G. Taylor and J. Ralph Van Duyne and secretary-treasurer Joseph H. Quigg, mayors Amos H. Radcliffe of Paterson, George N. Seger of Passaic, John H. Waters of Belleville, William Black of Rutherford, John C. Weaver of East Rutherford, Cornelius A. McGlennon of East Newark, Emil Diebitsch of Nutley, Charles A. Garland of Union, James J. Ryan of Wallington, William J. Brandenburg, Jr., of North Arlington, Ernest B. Dahnert of Garfield, Clarence W. Finkle of Clifton, Worrall F. Mountain of East Orange, Daniel F. Minahan of Orange, William Brueckman of Haledon and Henry S. Babbage of Glen Ridge. Harrison was represented by Alderman Frederick Clifton and Prospect Park by Peter Pousman.

The South Bend Controversy.

South Bend, Ind.—Dr. J. N. Hurty of the state board of health in a new statement says: "I deny absolutely that I ever said: 'South Bend is the dirtiest city in the state.' Instead of being the dirtiest city in the state, South Bend is one of the cleanest, and to me one of the most attractive cities, in the state. Of course, South Bend has some areas as dirty as any city in the state, but I believe them proportionately fewer than in Indianapolis. Here and now I wish most emphatically to state over my signature—'There is no cleaner or fairer city than South Bend in the state of Indiana. And I will further state that no city in Indiana is as clean as it should be. Noisome privies, f

which South Bend has very many, are a constant threat against public health. They are a storehouse of poisons of various kinds. They may and frequently do contain the poisons of typhoid fever, dysentery and other diarrheal diseases. Any city, with privies which pollute the ground and air and which are accessible to flies, invites disease and death. To do this is bad business. In Washington I talked with Dr. Carrol Fox about typhoid in South Bend. He said—"I am not surprised—the expected has happened, and it will happen again and again until the city abolishes its insanitary privies." Your water supply is not a menace to the health of South Bend. It is not perfect, but may be classed as very good. However, this does not mean it should not be further guarded. I advise the guard be doubled and that every drop be chlorinated, for it may become polluted at any time. All public water supplies, no matter how pure, may become polluted at any time and the practical, businesslike way is to chemically purify them every time and all the time. If, after this experience, open privies are not abolished and the public water supply of South Bend is not chemically purified, then surely stupidity will rule." A letter from Dr. Will Shimer, who was sent to the investigation of the epidemic by the state health board, describes this version of what happened at a meeting of the St. Joseph County Medical Society. He says:

"At this meeting I discussed the typhoid cases and deaths as reported in the previous 15 months. This seemed to indicate to me that a typhoid epidemic had been prevalent in South Bend for more than a year. A careful study of the information which I had obtained about many persons then sick with typhoid in South Bend convinced me that not one thing alone, but several, were the cause of the epidemic. The spot map which I had made and showed to the society indicated that there was a very close relationship between the cases which had occurred in the previous months and those that were existing at that time. At the close of my explanation I advocated vaccination of all of the school children and all other adults that cared to avail themselves of this protection.

"Some of the members of the society immediately brought up the question of the price to be charged for vaccination, making the statement that in a previous smallpox epidemic the prices had gone to the ridiculous sum of 25 cents. It seemed to be generally agreed that no charge should be above \$5, but was to be left to the discretion of the individual doctor in each case as to whether the fee was to be any less than that. I told them that if they followed my advice and instituted compulsory vaccination there would be many persons who would not be able to pay this reasonable fee and that some provision must be made by the medical society for doing charity work.

"There was not a single man who volunteered to assist the health officer in this work. It was then that I told the medical society that they as citizens of South Bend and as physicians were to some degree at least responsible for the present epidemic. My personal investigation of many cases revealed the fact that none of the people taking care of the sick had been instructed how to take efficiently of the body's discharges so as to prevent other cases and in only one instance had the doctor suggested typhoid vaccination for the well members of the family.

"The health officer then got up and excused the physicians by saying: 'Perhaps the members of the medical society had not kept up on the prevention of typhoid because they had felt so sure that typhoid could not become epidemic in South Bend.' Yet at the same time the health officer was speaking typhoid had been epidemic in South Bend for more than a year.

"I have talked this matter over with Mr. Diggs, who was present at the meeting, and he agrees with me that this is what was said and done at this time. I do not doubt but that the members of the society will disagree with me in detail, but in a general way this is substantially what was said and done. An unbiased account of the meeting might have been obtained if a reporter present to report the meeting had not been forced to leave by the unanimous vote of the society just before my report was made."

WATER SUPPLY

Free Water for Institutions.

Columbus, O.—The city council has passed an ordinance to relieve certain institutions from the payment of bills for water service. The ordinance says: "Hospitals, asylums and other institutions devoted to the relief of the poor, the aged, the infirm or destitute persons or orphan children, situated within the corporate limits of the city and not maintained by general taxation, desiring to be relieved from the payment of bills for water service, shall make application for such relief, at the office of the division of water, upon prepared forms, detailing information. The division of water shall investigate each application, and, together with application, within ten days after its

receipt, shall file with the clerk of the city council a report showing number of rooms, conditions of plumbing, arrangement of meter and service supply water for power, elevator, domestic and other charitable, partly charitable and non-charitable purposes. Council reserves the right to reject any application for water free of charge, and may require at any time the payment of any bill or part of any bill, for water supplied such hospital or institution, which, in its judgment, is deemed just and reasonable. The clerk of the city council, upon recommendation of the committee on water of council, may demand of any hospital or institution applying for or receiving water free of charge or at a special rate, a detailed statement for any certain period, of its revenues and expenditures and specific information regarding the work it has done; such report to be filed with the city clerk within ten days after demand is made. Hospitals or institutions granted water free of charge shall notify the division of water of any changes or alterations in plumbing or buildings as soon as completed; and the division of water shall make periodical inspections of such hospitals and institutions, and, if changes or alterations conflict with original report of service supplied, the city clerk shall be promptly notified. Wastage of water by reason of defective plumbing or otherwise shall be avoided by such hospitals and institutions, and the privileges granted by this ordinance revoked if such wastage is not stopped within five days after notifications by the division of water that such wastage exists. The division of water of the department of public service, at its regular semi-annual collection periods, shall, at the then current rate per one thousand cubic feet charged general consumers for water, render to the council bills for the amount of water used by the hospitals and institutions granted the use of water free of charge under conditions and terms named herein, which bills shall be promptly paid to the said division of water out of the general revenue fund of the city upon provision being made therefor by the council. If such bills are not so authorized by council to be paid to the division of water within the time limit allowed for the payment of regular semi-annual water bills, the division of water is hereby authorized and directed to notify such hospitals and institutions that all bills for water supplied from the date for which said bills are rendered will be required to be paid by such hospitals and institutions; and all such hospitals and institutions, in such case, shall be required to pay for all water supplied them by the division of water, unless and until provision is made for its payment by said council."

City Refuses to Sell Plant.

Windsor, Ont.—Windsor water works will not be sold nor leased to the Essex border utilities commission, which is planning to supply water to Ojibway and other municipalities west of Windsor, according to a statement by a member of the border city water commission. Negotiations were recently made by the utilities commission to secure a supply of water, lease of the plant, or at so much per 1,000 gallons. The Windsor board is ready to sell water, but not its plant, the commissioner said. Now that Windsor has refused to sell or lease, steps may be taken by the utilities commission to take over the Walkerville plant.

Pitometer Survey Finds Waste.

Niagara Falls, N. Y.—City manager Carr has reported to city council as follows: "Some time ago the city council authorized the employment of the Pitometer Company of New York to make a survey for leaks in our water distribution system. This survey has been completed. Apparently very few leaks were found. Two leaks in service connections were located and a considerable leakage through defective plumbing is reported, together with two large meters which are reported as running, one 13 per cent slow, the other 20 per cent slow. The operator claims that 80,000 gallons of water are wasted on Kosciusko street between East Falls street and the Erie railroad and 200,000 gallons per day are wasted on Eleventh

street between Buffalo avenue and East Falls street, this wastage being due to defective plumbing and hopper closets. The error in the two large meters delivered to two of our local plants amounts to about \$176 per quarter. All these defects will be corrected, after which time a check will be made on the claims of this company to determine as to whether they have fulfilled their contract in calling our attention to a wastage amounting to 3 1-3 million gallons per year.

FIRE AND POLICE

Thorough Inspection by State Fire Marshal.

Champaign, Ill.—Four members of the state fire marshal's department in Springfield, assisted by deputy fire marshal Charles J. Roberts, have given Champaign and Urbana the most thorough fire inspection the Twin Cities have ever had. Every school, church and business house in the two cities were visited within a period of ten days and a searching examination of conditions relating to fire prevention made. A total of 612 inspections was made and 348 defects were found. These defects consisted mostly of poor electric wiring, badly constructed or dangerous fire escapes, large piles of rubbish or old buildings in a bad state of repair. In certain few cases the property owner or tenant objected to the inspection and also to the order to make changes in the premises to conform with the law where such change seemed necessary to the inspectors. The men who visited the school-houses commented on the excellent condition in which they found the buildings and premises, and the best premises were declared to be as well prepared against fire as any in the state. Each place visited was given a card, and where there was a fire law violation the inspections will be rechecked at an early date to see that the orders have been complied with.

\$1,500,000 Fire in Munitions Plant.

New York, N. Y.—The plant of the Washburn Wire Company, located on the East river, was destroyed by fire, said to be of incendiary origin. The factory was working on contracts for government war needs, turning out springs used in the manufacturing of rifles and ammunition. A large addition to the plant had just been completed. The big blaze imperiled a large section of nearby tenement houses, so that thousands of persons were ordered out of their homes. At least 100,000 persons watched the plant burn. Old and experienced firemen said it was one of the most spectacular fires they ever saw. The damage was estimated at \$2,000,000. The destruction of the plant brought out the fact that enemy aliens were working in territory expressly forbidden to them by the President's proclamation of April 6. In the force of 1,000 men there were at least twenty Germans, not naturalized, a number of German-Americans, and more than 200 Austrians, many of whom were not naturalized. A number of the enemy aliens were examined by fire marshal Brophy. Brophy said he had received information that the fire started in four places at once. The blaze first seen by most of the witnesses was in the basement on the 118th street side. Others said they saw fire on the second floor and on the first floor, in two places. The new section of the plant, a five-story brick structure, which had been equipped with new machinery and would have been put in operation within the week, was of fireproof construction and undoubtedly saved the rest of the block, made up of crowded tenements. A second alarm brought fire chief "Smoky Joe" Martin, acting chief in the absence of chief Kenlon, to the plant. He at once turned in three more alarms, bringing most of the apparatus in Manhattan. As soon as water tower 3 reached the scene it was shot up on the 118th street side, and a big stream of water poured on to the roof. It had not been in operation more than three minutes when there was a muffled explosion, and a wall toppled outward and on to the tower, demolishing it beneath a shower of bricks and injuring two firemen. A score of firefighters had almost miraculous escapes from the tons of falling brick in the narrow and crowded street. The floors of the building

were soaked with oil. There was much oil in the building, used in the manufacture of springs, and it lent fury to the flames. Several explosions due to oil occurred soon after the fire started. As the fire progressed, the crash of heavy machinery falling from the top floors could be heard for blocks. A big flywheel from the fifth floor fell in the midst of a group of firemen, injuring one of them. A brisk, shifting wind fanned the flames in every direction, and deputy chief Martin gave orders that the tenants in the apartment houses near by be warned. The firemen experienced difficulty because there was no high pressure available. The water was taken from old six-inch mains. The firemen were assisted by the three fireboats, the McClellan, Lawrence and Hewitt, which stuck their noses as close as possible to the blaze, and by three fire barges, which were a new equipment of the New York, New Haven & Hartford Railway yards, a half mile away. As the falling walls made the danger more acute, the police of the precinct, aided by reserves from half a dozen stations, pushed the crowds back. A falling wall seriously injured John Harvery of the fireboat McClellan. Michael Lynch of Truck 29 was at work on the East River side of the plant when he was caught in a shower of glass and suffered severe lacerations of the face and hands. Other firemen were injured.

After a four-hour fight chief Martin announced that the fire was under control. At that time it had destroyed the main section of the plant, gutted the new section, but leaving the walls standing, and had damaged nearby buildings slightly. Before that time Marshal Brophy with a corps of assistants summoned every one who knew anything about the fire to an office of the company in the machine shop. At the start he found a difference of opinion as to how many men were in the building when the fire started. Manager Turner said there should have been six or seven; patrolman Cowhen said that, judging from those he saw getting out of the plant, there must have been twenty-five; others put the number at thirty-five. The men at work were making repairs and getting the plant in shape for the night shift, scheduled to go to work at 7 o'clock, because of the urgency of orders. "It was the worst fire that the department has had to fight in years," said chief Martin. "I am sure that from the rapid spread of the flames large quantities of oil must have been stored in the building. I saw flames break out at different points, and a fire usually starts at one point. I cannot account for this fire having made such great headway in such a short time. The rapid spread of the flames was remarkable in view of the sprinkling system installed in the factory."

Most of Department at Fatal Tenement Fire.

Lowell, Mass.—Trapped by smoke and flames on the top floor of a three-story wooden structure, containing twelve tenements, four persons, a man and three children, were suffocated and burned to death in a fire which swept through the building shortly after 11 o'clock at night. When found, the bodies were burned to a crisp. So far as fatalities are concerned it was one of the worst fires in the history of the city. People living on the second and third stories of the building, unable to make their escape by either the front or rear stairway, owing to the smoke and flames, jumped to the ground and about a dozen suffered from burns and injuries. Five people were removed to hospitals while others were attended by doctors who arrived on the scene shortly after the sounding of a second alarm of fire. But for the prompt and efficient work of the members of the fire department, the loss of lives and damage to property would have been very large. Although seriously handicapped by the congestion of buildings and narrow passageways in which they had to work, also by the smoke and flames, the firemen did excellent work. The sounding of a second alarm twelve minutes after the first alarm was sent in brought the major portion of the fire apparatus to the scene, as well as a score of police officers, doctors and the ambulance.

There were about sixty people housed in the tenements in the building and owing to the lateness of the hour every one was in bed. The flames made such rapid headway

after being discovered that those on the second and third floors found it impossible to escape without jumping through windows or lowering themselves by means of clothes lines, to the ground. The fire, the cause of which is unknown, had its inception in a closet in a hallway on the first floor, midway between the front and rear stairways. Chief Edward F. Saunders of the fire department and members of the district police investigated conditions. Eight lines of hose were used and several chemical lines were played on the flames. The work of the firemen was greatly retarded by the dense volumes of smoke, but a couple of the firemen, equipped with smoke masks, made their way into the burning building and carried people to windows, who were taken down the ladders to the ground. It was about midnight, after the fire was pretty well under control, that firemen discovered the bodies of the four victims on the top floor.

Fire Commissioner Closes Business on Residence Street.

New York, N. Y.—Following the receipt of many protests from residents living in the vicinity, fire commissioner Adamson issued an order directing the discontinuance of a ladies' tailoring shop, recently opened for business in a high-class residence section of the city. Under the procedure laid down by the corporation counsel a notice was served on the proprietor of the tailoring establishment, directing him to cease using the premises for business purposes within ten days. The tailoring shop is cited by the commissioner as furnishing an excellent example of the protection the new zoning law affords to property owners from the intrusion of a business occupancy in a community of private residences. Before the act took effect, in July, 1916, there was no legal barrier to prevent a tailor or a butcher or a grocer or a business occupancy of any kind from going into a neighborhood exclusively of private homes, with the resulting injury to private residence values. The enforcement of this law is given to the fire commissioner.

"Abatement Law" Declared Constitutional.

San Francisco, Cal.—The red light abatement law has been declared constitutional by the District Court of Appeals in two decisions by Judge Thomas J. Lennon. The decisions followed appeals from the Superior Courts in the cases of the State against the Casa Company and James C. Hown against Joseph Alexander of the North End Realty Company and others. As a result of the Casa decision several pieces of local property will have to remain closed for one year. Appeal was made on the ground that the law was class legislation, but judge Lennon ruled that the state's right of police power was sufficiently broad to cover the legality of the act. Judge Lennon also held that owners of property were to be held responsible for the character of the occupants. "Every owner of property who leases it to another," he said, "owes the public a certain degree of diligence and proof of the general reputation of the place."

Fire Inspection of Food Storage.

Springfield, Ill.—The division of fire prevention has issued credentials to one hundred special inspectors, who have been recommended by the conservation committee in Illinois to cover the entire state outside of Chicago, which has already received attention. These special men are to make a survey of fire-hazard conditions as to elevators, flour mills, grain and hay warehouses, warehouses, wholesale groceries, cold storage warehouses, packing and slaughter houses, stock-yards, breweries, malt houses, distilleries, bakeries and coal mines. A special book of instructions has been gotten out under the direction of state fire marshal Gambler, and each inspector is to make his report in accordance with the adopted rules. All reports are sent direct to the fire marshal. Upon completion of this work by the special inspectors the regular deputy fire marshals will be assigned to check up inspections and see that recommendations for safeguarding such property are carried out. It is expected that owners and proprietors of such establishments will in the meantime give proper attention to the correction of defects found to exist upon their premises.

GOVERNMENT AND FINANCE

Court Validates Bonds for Improvements.

St. Petersburg, Fla.—The supreme court of the state has declared valid a \$180,000 bond issue which is to be sold in a few weeks. The money is to be used for the following purposes: Water front improvement, \$133,000; improvement of city buildings, \$5,000; sewer extensions, \$30,000; purchase of railroad lots, \$12,000. The development of the waterfront will include dredging estimated to amount to 275,000 cubic yards, a mile of slab sea wall and a municipal pier. Bids will be called for the work about a week after the bonds are sold. W. J. Overmen is director of public works and will have charge of the improvements.

City Gives Up Commission Form.

Lynn, Mass.—Lynn decided to overthrow the commission form of government after seven years' experience with it at the recent general election. Lynn's vote was almost two to one, 6,013 for the charter revision to 3,731 for retaining the commission. The new charter will go into effect in January and provides for a mayor and eleven aldermen, four at large and seven by wards. The charter change won in every one of the twenty-five precincts.

Referendum Elections in Massachusetts Cities.

Gloucester, Mass.—The preferential system of voting was adopted by Gloucester, 1,304 to 528. Under the plan voters may register first, second and third choices for all candidates.

Methuen, Mass.—Methuen decided in favor of becoming a city by 912 to 450, thus giving Massachusetts its 38th city. Revere, Peabody, Leominster and Attleboro entered the ranks last year. There now remain sixteen towns with sufficient population under the state law—12,000—to become cities, but they feel that advantages of the town form of government make it not worth while for them to change. Methuen has 14,007.

Vote in Favor of Increased Salaries.

Trenton, N. J.—All four referenda were carried by substantial majorities and the salaries for almost all city employes will now be raised. School teachers of the city won their referendum by a majority of 4,899, the opposition to this being slight. The total vote was 7,829 for and 2,930 against. The firemen finished second in the referendum balloting, winning their increase by 3,394. The total vote on this question was 6,917 for and 3,523 against. The policemen trailed third, winning their increase by 2,169. The vote was 5,815 for and 3,646 against. The increase for city employes was not so popular. The total vote on this question was 5,399 for and 4,611 against, a majority of 788. The latter provision applies only to employes earning up to \$1,950 a year.

Baltimore Favors New Charter.

Baltimore, Md.—By a heavy vote of 28,679 to 16,822, a majority of 11,857, the voters have approved the proposition to create a charter board to draft a new government instrument. The vote was a source of much gratification to the City-wide Congress which campaigned for the movement to submit to the people of Baltimore the question as to whether a new charter should be prepared under the terms of the home rule amendment to the state constitution. William H. Maltbie, Dr. A. R. L. Dohme and DeCoursey W. Thom, three of the most active workers for the project, were particularly gratified. There will be no delay in getting down to the business of completing the big task within the prescribed limit of six months. At the end of that time a draft will be printed for public distribution and will be placed on the ballot at the next election, which occurs in November, 1918. It will then be up to the people to adopt the measure or to reject it. If adopted, it will then stand ratified and under the law the new form of government could be created and put in work-

ing operation before it became necessary to legislate any elective officers out of office, thus averting any personal hardships. Because of this favorable condition, the City-wide Congress deemed the recent election a most timely occasion for the introduction of the move for the amendment. The commission which automatically becomes an official body will be limited, in preparing a new charter, to the present powers granted the city by the legislature, or in other words, it cannot increase the authority granted the city by the legislature for its own government. Its powers consist entirely of rearranging the present powers of Baltimore in such a way as to elicit more benefits. In further explaining the proposition, Mr. Maltbie said: "The amendment gives to any county of the state or to Baltimore the right to adopt a new charter and provides that after the new charter is adopted, but not before, the community shall have the right to enact its own legislation without an appeal to the state legislature on all subjects which are covered by the grant of powers which the state has made to the counties or to Baltimore city, and it further provides that within that range the state legislature shall not legislate." The selection of the commission is made by the power granted any 2,000 citizens to unite in making nominations. Such a commission as provided for on the ballot has been nominated. The following men have agreed to serve on the body. J. Kemp Bartlett, Dr. John H. Latane, Alfred S. Niles, Charles E. Falconer, William J. Ogden, Edgar Allan Poe, David Bachrach, Henry D. Harlan, Dr. Charles O'Donovan, Adolph H. Hecht and William H. Maltbie.

Commission Government Approved.

Collingswood, N. J.—Commission government won by 48 majority at the recent election.

East St. Louis, Ill.—East St. Louis, by a vote of two to one, has adopted the commission form of government. Only about one-third of the voters cast their ballots at the polls. Out of a total of 7,238 votes cast there were 4,784 votes for the commission form of municipal control and 2,454 votes against it. The movement for the new form began after the recent race riots, and was backed by influential citizens and opposed by the city officials.

Clarksburg, W. Va.—The commission form of municipal government was adopted by the city of Clarksburg by a vote of 2,852 for and 760 against. The new charter will bring four suburban towns into the city, making Clarksburg the third largest city in West Virginia.

Favors Commission Government.

South Charleston, O.—With a majority of 114, South Charleston voted in favor of a commission form of government, at the recent special election. The votes in favor of the new charter were 180 for and 66 against it. South Charleston is the first village in the state to frame and adopt a charter, although many cities have done so. The charter calls for the election of three commissioners, elected on the non-partisan independent ballot. The commissioners will take the place of the nine men composing the present council and the board of public affairs. They are subject to recall by the voters at any time after their election if they prove unsatisfactory. According to the charter the commissioners will hold office for four years, commencing January 1, after their election, except for the one securing the lowest number of votes. He will serve for two years. Stewart L. Tatum was the attorney to the charter commission.

City Manager Plan Wins and Loses.

Waltham, Mass.—This city at the recent election declared itself dissatisfied with the present mayor and aldermen form of government, and voted in favor of the city manager plan. The vote on adoption of plan D, for a council of five and a manager, was carried by a fairly close majority. For it, 1,882; against it, 1,503. Under this plan there are to be no primaries and the five men receiving the highest votes will become members of the council. The leader among these will be mayor and

will be paid \$2,000 a year. The others have the right to vote themselves \$500 a year if they so elect. The managers will be selected by the council. The first election under this plan will be held on December 4.

Haverhill, Mass.—Haverhill voters went against a change to plan D, for a mayor, council and city manager, and stuck to its present form with a mayor, four aldermen and four school committeemen, all holding office for two years. The vote stood: "No," 3,170; "yes," 1,775.

Winchester, Mass.—Winchester, the home of governor McCall, turned down the change to a town manager, 959 to 497. Selectman J. A. Laraway led the opposition.

Altoona, Pa.—Stevens, Cassidy, Westfall and Lafferty were elected city councilmen of Altoona by double the vote cast for the present board of councilmen. They are pledged to employ a city manager.

MISCELLANEOUS

Baltimore Does Not Want Civic Center.

Baltimore, Md.—By a vote of 22,500 against 25,274 the voters have disapproved the proposed loans which would have provided for a civic center at a cost of \$3,000,000. Mayor Preston, who urged the loans, declared that the defeat of the \$3,000,000 park loan would not stop the contemplated improvements at the civic center, St. Paul street and Mount Vernon square. He explained that the administration would go on with these improvements, although at a slower pace. Among the municipal administration leaders there was great regret over the failure of the voters to ratify the park loan, as it had been planned to not only complete the civic center and other downtown improvements, but to establish a number of "breathing spots" in the form of parked areas in the most congested sections of the city. Had the loan been ratified it is improbable that any of the stock would have been sold, as the sinking fund was sufficient to absorb the stock as the money was needed.

Waterfront Improvement in Philadelphia.

Philadelphia, Pa.—Work on the construction of the new city pier, at the foot of McKean street, Delaware River, is progressing so rapidly that it will be ready for use by June 1, 1918, according to the announcement made by director Webster, of the Department of Wharves, Docks and Ferries. This pier is the first of a group of ten to be built in the southern part of the city, to be known as the Moyomensing group. This is following out the plan of the dock department of building the piers in groups. Final bids, which will amount to about \$300,000, are to be let soon. These will be for the laying of a concrete slab floor on the second deck, a Belgian block floor on the main deck, elevators, winches, electrical appliances, movable doors and other necessary equipment. This structure is to cost about \$1,719,000. The dredging has been completed, the fill is 60 per cent done, the substructure 95 per cent complete and the superstructure about 50 per cent. To the Department of Wharves, Docks and Ferries has been assigned the work of developing the port. A broad policy of extension has been formulated to meet present demands as well as the era of industrial activity that is anticipated. Engineers, expert in city planning, particularly as it is applicable to future Philadelphia, are charged with the responsibility of carrying out the plan of improving and enlarging the harbor facilities. One item of the general loan included \$3,300,000 for the acquisition of real estate, piers and terminal facilities in South Philadelphia from several railroad corporations, the whole to be used in the development of a large terminal available for shipping upon the waterside and countryside transportation upon the land side. Another loan item of \$10,000,000 provides for the construction and improvement of wharves and docks, including the acquisition of land upon which to erect them; for the construction of bulkheads, and for the reclamation of land to be used for the construction of wharves and docks. The city's plans call for and the loan money provides for: The building of a great shipping

LEGAL NOTES

A Summary and Notes of Recent Decisions— Rulings of Interest to Municipalities

Extending Streets—Necessity.

(N. D.) The question of the necessity for the extension of a street is legislative rather than judicial, and its determination is vested with local municipal legislative bodies, and a village ordinance is competent proof of such necessity.—*Village of Ashley v. Minneapolis*, St. P. & S. S. M. Ry. Co., 163 N. W. 727.

Gas and Electric Rate by Contract—Power to Change.

(N. Y. Sup.) A gas and electric company, which contracted with the mayor to furnish service at certain rates in consideration of his dismissing a suit against the company, and which furnished service at those rates for a number of years, was thereafter estopped to deny the validity of the contract on the ground that it was ultra vires as to the city.—*Wackenhut v. Empire Gas & Electric Co.*, 166 N. Y. S. 29.

Revising City Ordinances—Extra Pay for City Attorney.

(S. D.) Where a city attorney revises the city ordinances without contract for extra pay he is not entitled to extra compensation therefor, since such services are incident to his office within Pol. Code, §1247, providing that he shall perform all services incident to his office.—*Hosford v. City of Platte*, 163 N. W. 714.

Statements by City Officials—Building City.

(Wash.) No statement by a councilman and city treasurer to one buying local improvement bonds from the contractor that under an ordinance the city would take them over and enforce the assessments, if they were not paid from the local improvement fund, could bind the city.—*State v. City of Tacoma*, 166 P. 66.

Valid and Invalid Parts of Ordinance.

(N. J.) The whole of a city ordinance will not be set aside because part of it is invalid, where the valid and invalid provisions are separable.—*Koettegen v. City of Paterson*, 101 A. 253.

Formality in Passing Ordinance.

(N. D.) Where the Legislature has not required the observance of any formality in the passage of village ordinances it is sufficient that an ordinance shall be proved to be the will of the governing body.—*Village of Ashley v. Minneapolis*, St. P. & S. S. M. Ry. Co., 163 N. W. 727.

Money Improperly Paid—Counter Claim for Salary Recovery.

(S. D.) A claim for money improperly paid by a city to a city officer can be pleaded as a counter claim in an action by such officer to recover his salary.—*Hosford v. City of Platte*, 163 N. W. 714.

terminal in South Philadelphia; the construction of ten new piers; the improvement and enlargement of a number of existing piers; the abolition of grade railroad crossings, which heretofore have acted as a deterrent to the development of South Philadelphia; the establishment of a joint or belt line railroad around the southern section of the city; the acquisition and reclamation of land; the construction of bulkheads; land being acquired by the city from public corporations and from private interests. One property, with a frontage of 284 feet upon the Delaware River, was acquired from the Lehigh Valley Railroad Company, and a modern pier, 100 feet wide and 535 feet long, with a one-story steel and concrete superstructure, intended for river steamer use, will be erected thereon. The recently enacted rivers and harbors bill passed by Congress carries \$1,800,000 for the improvement of the Delaware River channel, \$40,000 for the improvement of the upper Delaware, \$300,000 for the Schuylkill River, a new project, and about \$200,000 for streams tributary to the Delaware.

THE MUNICIPAL INDEX

In Which Are Listed and Classified by Subjects All Articles Treating of Municipal Topics Which Have Appeared During the Past Month in the Leading Periodicals.

It is our purpose to give in the second issue of each month a list of all articles of any length or importance which have appeared in all the American periodicals and the leading English, French and German ones, dealing more or less directly with municipal matters. The index is kept up to date, and the month of literature covered each time will be brought up to within two or three days of publication. Our chief object in this is to keep our readers in touch with all the current literature on municipal matters. In furtherance of this we will furnish any of the articles listed in the index for the price named after each article, except that where an article is continued in two or three issues of the paper, the price given is for each of said issues. In addition to the titles where these are not sufficiently descriptive or where the article is of sufficient importance, a brief statement of its contents is added. The length also is given, and the name of the author when it is a contributed article.

ROADS AND PAVEMENTS.

Asphalt:

Sheet Asphalt for Country Roads. Use of sheet asphalt by state and county highway authorities on heavy traffic road. By E. A. Trego. 2 ills. 1,100 words. Engineering and Contracting. Oct. 3. 10 cts.

Sheet Asphalt on Country Road. The first sheet asphalt road constructed by a county in New Jersey. Removing telford base and laying concrete base. 2 ills. 1,500 words. Municipal Journal. Oct. 11. 10 cts.

Resurface Old Macadam Roads with Rock Asphalt. Method employed in Kentucky costs from \$6,000 to \$7,000 per mile for a roadbed 14 ft. wide. 3 ills. 800 words. Engineering News-Record. Oct. 11. 15 cts.

Asphalt Plant:

Remodeling of Civic Asphalt Plant, Ottawa. Economy of operation of oil-burning mixer compared with use of coal. By the use of manganese steel shanks capacity of mixer was greatly increased. By L. McLaren Hunter. 8 ills. 1,500 words. Canadian Engineer. Oct. 25. 15 cts.

Bituminous:

Methods of Applying Bituminous Materials. Cold surface treatment; hot surface treatment; surface binders, penetration method. By G. Cameron Parker, Engineer of Highways, Ontario, Can. 2,500 words. The Surveyor. Aug. 31. 40 cts.

Clinker Asphaltic Macadam, Hounslow. Description of five sections constructed under different methods. Bitumen percentage and mesh composition for each case. By J. G. Carey. 4,000 words. The Surveyor. Oct. 5. 40 cts.

Brick:

The Recent Revision of Ideas About Brick Pavement Construction. Advantages and method of construction of the monolithic type. 3 ills. 3,000 words. Municipal Engineering. Oct. 25 cts.

Present Practice in the Construction of Brick Pavements in Chicago. By H. J. Fixmer. 2,000 words. Municipal Engineering. Oct. 25 cts.

Shale Cube Pavement on Stutson Street, Rochester, N. Y. By Geo. C. Wright. 1 ill. 600 words. Good Roads. Oct. 20. 10 cts.

Concrete:

The Four-Inch Concrete Roads of California. Type of road laid by state. Principal causes of the few actual failures with this type. 7 ills. 600 words. Engineering and Contracting. Oct. 3. 10 cts.

Speeding Up a Concrete Road Job by the Bonus System. Contractor on concrete road job increases by fifty per cent. the amount of work done by his equipment without enlarging the gang. A bonus is paid to every man on the mixer gang for each section of work in excess of the daily minimum. 5 ills. 2,200 words. Municipal Journal. Oct. 18. 10 cts.

Handling Aggregates for Concrete Roads. Dumping already proportioned batches direct from Koppel cars into mixer scoop. 700 words. Municipal Journal. Oct. 11. 10 cts.

La Salle's Concrete Causeway Has Become Popular. Difficulty of foreseeing traffic development is emphasized. Experience with reinforced concrete railing. By H. K. Higgins. 2 ills. 800 words. Engineering News-Record. Oct. 4. 15 cts.

Wet Road Concrete is Compacted by Transverse Rolling. Experiments for removing excess water from concrete. Rolling solved difficulty and improves concrete. By P. C. McArdle. 1 ill. 1,000 words. Engineering News-Record. Oct. 4. 15 cts.

Roller Method of Finishing Concrete Roads as Used by Vermillion County, Illinois. By P. C. McArdle. 1 ill. 1,000 words. Engineering and Contracting Co. Oct. 3. 10 cts.

Causes of Cracks in Concrete Pavements. From a paper by T. A. Goldbeck. 3,000 words. Concrete. Oct. 20 cts.

Use of Light Canvas Strip for Floating Concrete Pavement. Method of finishing concrete on state highway construction near Jamestown, N. Y. By Chas. T. Fisher. 2 ills. 700 words. Good Roads. Oct. 20. 10 cts.

New Jersey Concrete Road Construction. Reinforcing, curb protection bars, and one-two-three mix on road being built to carry part of the Camp Dix traffic. Surface-finishing concrete. Hauling construction materials. 4 ills. 1,000 words. Municipal Journal. Oct. 25. 10 cts.

Ohio State Concrete Roads Have New Specifications. Mix must be at least one minute. Variable proportion of cement may be used. 800 words. Cement and Engineering News. Oct. 20 cts.

Construction:

Dangerous Underpass Abolished. Replacing narrow and crooked underpass and straightening road. Excavating under railroad track and laying pavement. 4 ills. 1,000 words. Municipal Journal. Oct. 4. 10 cts.

Lengthening Radius of Curb Corners. 1 ill. 150 words. Municipal Journal. Oct. 4. 10 cts.

Street Planning and Construction in Bexley. Care in selecting and enforcing proper specifications secures good results. Bituminous pavements of various kinds. Concrete pavement with integral curb. Rounded brick gutters. Comparative costs of different pavements. By Charles Carroll Brown. 10 ills. 3,500 words. Municipal Journal. Oct. 4. 10 cts.

Construction in West Kentucky. Over half million dollars now being spent by eight western Kentucky counties in highway construction and improvements. 800 words. Southern Good Roads. October. 10 cts.

Highway Work in Sheffield. Outline of the work done during the past year. 2,000 words. The Surveyor. Oct. 12. 40 cts.

Road Work in Broward County, Fla. By H. C. Davis, County Engineer. 1,000 words. Southern Good Roads. Oct. 10 cts.

Convict Labor:

Prison Labor on County Road Work in Ohio. 500 words. Engineering and Contracting. Oct. 3. 10 cts.

Finance and Cost:

Cost Keeping Records for Road Construction and Maintenance in the State of Washington. System for recording cost data was prepared by joint committee and will be used on all state road work. 8 ills. 1,500 words. Engineering and Contracting. Oct. 3. 10 cts.

Highway Financing in Texas in Need of Reform. County road improvement procedure is example of extravagant methods of paying for work. By R. L. Morrison. 1,000 words. Engineering News-Record. Oct. 4. 15 cts.

Road Building Serial Bonds Save Money. Tables and diagrams show that sinking fund and annuity methods cost taxpayers many millions. By M. O. Eldridge. 5 ills. 4,000 words. Southern Good Roads. Oct. 10 cts.

Grade Crossings:

Railroad Grade Crossings Within Municipalities. From a paper by Max Thelen. 3,000 words. Good Roads. Oct. 27. 10 cts.

Grading:

Excavating in Shallow Cut. Keystone excavator removes 15 inches of road and loads it into motor trucks. 500 words. Municipal Journal. Oct. 4. 10 cts.

Steam Shovel in Street Excavation. 1 ill. 250 words. Municipal Journal. Oct. 25. 10 cts.

Granite Block:

Grouted Granite Block Laid Under Congested Traffic Conditions. Paving

of Dewey Square, Boston, in front of an extremely busy railway terminal presents special problems. 2 ills. 1,000 words. Engineering News-Record. Oct. 11. 15 cts.

Legal:

New Highway Legislation in Arkansas. Laws enacted in 1917. 4,700 words. Good Roads. Oct. 20. 10 cts.

Highway Legislation in New York. Road laws passed during 1917 session of the legislature. 5,000 words. Good Roads. Oct. 27. 10 cts.

Macadam:

Stone-Gravel Road Proves Its Usefulness in Michigan. State highway departments specifications also permit use of slag for base and surfacing. By D. A. Thomas. 1,500 words. Engineering News-Record. Oct. 11. 15 cts.

Machinery:

Modern Machinery in Road Building. Various types of steam and gasoline driven machines are discussed. 6 ills. 1,600 words. Better Roads and Streets. Oct. 15 cts.

Machinery in Macadam Construction. Description of complete outfit used on a job in Ohio. 1,500 words. Municipal Journal. Oct. 25. 10 cts.

Maintenance:

Maintaining Macadam Roads in Richmond. How a small city maintains macadam streets by surface treatment with oil and keeping up small repairs. 1,600 words. Municipal Journal. Oct. 11. 10 cts.

Road Maintenance. By W. W. Crosby. 2,500 words. Better Roads and Streets. Oct. 15 cts.

Tolls for Road Maintenance Collected in Virginia. 700 words. Engineering News-Record. Oct. 11. 15 cts.

Earth Road Maintenance Handled by Contract in Kentucky County. By C. S. Bennett. 600 words. Engineering News-Record. Oct. 18. 15 cts.

Care of the Roadside. By R. E. Henry, Bureau of Public Works, Manila. 1,600 words. Better Roads and Streets. Oct. 15 cts.

Miscellaneous:

Work of the Road Board. Abstract of the seventh annual report on expenditures and construction of roads and bridges. 3,000 words. The Surveyor. Sept. 21. 40 cts.

Constructing Concrete Curbs for Asphalt Roads. 1 ill. 1,000 words. Municipal Engineering. Oct. 25 cts.

Suggestions for Paving Parkway Drives and Boulevards. Bituminous carpet on concrete base advocated; admixture of mineral dust with bitumen favored. By S. Whinery. 1,500 words. Engineering News-Record. Oct. 18. 15 cts.

Road Markers. A simple and cheap marker made of concrete. 1 ill. 250 words. Municipal Journal. Oct. 18. 10 cts.

Highways Designated by Markers on Bridges and Culverts. 3 ills. 300 words. Engineering and Contracting. Oct. 3. 10 cts.

Instructions of Kentucky Department of Public Roads for Making Road Surveys and Estimates. 3,000 words. Engineering and Contracting. Oct. 3. 10 cts.

Improving the Curves of Ohio Roads. Work being done by Ohio Highway Department. 600 words. Municipal Journal. Oct. 11. 10 cts.

Oiling:

Oiled Earth Roads in Illinois. Method of treatment, kind of material, and results obtained. By B. H. Piepmeyer. 4 ills. 3,000 words. Good Roads. Oct. 6. 10 cts.

Charts for the Use of Road Oiling Inspectors. To facilitate the solution of the ordinary problems connected with road oiling work, four hand charts have

been prepared. By Earle Glass. 4 ills. 500 words. Canadian Engineer. Oct. 4. 15 cts.

Sand:

Sand Road Experiments in Wisconsin. State Highway Commission is experimenting with the use of hay or straw and a bituminous binding material. By H. J. Kuelling, Assistant to State Highway Engineer. 1 ill. 1,500 words. Municipal Journal. Oct. 25. 10 cts.

State:

What Type of Road to Build in Kansas. From an address by W. S. Gearhart, State Highway Engineer. 2,200 words. Good Roads. Oct. 6. 10 cts.

Highway Problems in New York State. By H. E. Breed. 2,500 words. Good Roads. Oct. 6. 10 cts. 3 ills. 4,000 words. Oct. 13. 10 cts. 2,200 words. Oct. 20. 10 cts.

Road and Bridge Construction in Iowa During the Past Four Years. 1,000 words. Engineering and Contracting. Oct. 13. 10 cts.

Pennsylvania Will Build Only Heavy Traffic Highways. State highway department will concentrate efforts on 3,300 miles of inter-county routes with city pavement surfacing. 1,000 words. Engineering News-Record. Oct. 11. 15 cts.

States Spent \$288,000,000 on Roads and Bridges in 1916. Office of public roads issues figures showing a mileage of 2,455,761 for rural routes. 2,500 words. Engineering News-Record. Oct. 11. 15 cts.

Permanent Roads Transform Florida. Types of paving laid. 3 ills. 1,000 words. Southern Good Roads. Oct. 10 cts.

The Roads of Maryland. From an address by Henry Shirley before the Southern Commercial Congress. 1,000 words. Good Roads. Oct. 20. 10 cts.

Washington State Road Work. From a paper by R. L. Sparger. 3,000 words. Good Roads. Oct. 13. 10 cts.

Outstanding Features of the Work of Various State Highway Departments for 1917. Discusses the work in Iowa, Virginia, North Carolina, Texas, Nebraska, Delaware, Oklahoma, Nevada, Mississippi, Illinois, South Dakota, West Virginia and Indiana. 3 ills. 6,000 words. Municipal Engineering. Oct. 25 cts.

Traffic and Traction:

Influence of Road Surface on Tractive Resistance. Results of tests in California. 750 words. Engineering and Contracting. Oct. 3. 10 cts.

Recent Tests of Road Traction. Results of California experiments. 1,600 words. Better Roads and Streets. Oct. 15 cts.

Heavy Traffic for Roads and Roads for Heavy Traffic. 1,100 words. Good Roads. Oct. 6. 10 cts.

Weight and Amount of Traffic on Iowa Country Roads. Interesting statistics from recent traffic census. 700 words. Engineering and Contracting. Oct. 3. 10 cts.

Effect of Modern Traffic Upon Urban Roads and Tramway Tracks. The first of two articles. By E. W. Cockerlyne. 3,000 words. The Surveyor. Sept. 28. 40 cts.

The Effect of Modern Traffic Upon Urban Roads and Tramway Tracks. The second of two articles. By E. W. Cockerlyne. 3,000 words. The Surveyor. Oct. 5. 40 cts.

SEWERAGE, DRAINAGE AND SANITATION.

Activated Sludge:

Activated Sludge Process for Stock Yards. General description of plant proposed for treating sewage from Chicago stock yards district. Estimated cost of construction and operation. 3,000 words. Municipal Journal. Oct. 18. 10 cts.

Removing Activated Sludge. Information concerning recent experiments at Milwaukee. 750 words. Municipal Journal. Oct. 18. 10 cts.

Various Methods of Dewatering Activated Sludge. By Edward Bartow. 1,800 words. Municipal Engineering. Oct. 25 cts.

Comparative Tests of Air Diffusers and Devices for Dewatering Activated Sludge. From a paper by Edward Bartow. 2 ills. 3,000 words. Canadian Engineer. Oct. 18. 15 cts.

Associations:

Abstract of Papers at American Public Health Association Meeting: State Public Health Laboratories in Time of War, by Henry Albert; Activated Sludge Promises to Solve Packinghouse Wastes Problem, by Langdon Pearce; Effect of the War on Garbage—Production and Disposal, by I. S. Osborn; State Health

Boards Should Control City Refuse Service, by E. D. Rich. 3,500 words. Engineering News-Record, Oct. 25. 15 cts.

Construction:

Two Toronto Sewers Built on Piles and Timber Bents. Involved problems of shifting dead weights and strengths of sub-structures instead of the usual sewer problems of stationary dead weights and nature of ground traversed. Fill of 215,000 cubic yards was necessary. By W. G. Cameron. 5 ills. 1,800 words. Canadian Engineer. Oct. 4. 15 cts.

Tentative Recommended Practice for Laying Sewer Pipe. Recommendations of Committee of American Society for Testing Materials. 1,000 words. Engineering and Contracting. Oct. 10. 10 cts.

Sewer Construction in Chicago. Contractor's methods employed in laying six by nine-foot to nine-inch sewers, a considerable part in tunnel. Cost details. From a paper by H. R. Abbott. 10 ills. 2,500 words. Municipal Journal. Oct. 11. 10 cts.

Six-Foot Cast Concrete Pipe Safely Rolled a Mile and a Half to Trench Line. A Manila rope hoop just back of bell kept bell from cracking. Steam aided in cold weather curing. Fourteen men cast twenty pipes a day. 6 ills. 1,000 words. The Contractor. Oct. 26. 10 cts.

Construction Plant and Methods Employed in Building the Woodville Avenue Sewer at Toronto. 3 ills. 5,000 words. Municipal Engineering. Oct. 25 cts.

Features of Sewer Construction Work at Elmhurst, Ill., and South Bend, Ind. Using Lock-Joint Sewer Tile. 4 ills. 1,800 words. Municipal Engineering. Oct. 25 cts.

Drainage:

Yardage Outputs Large in Machine Ditch Cleaning. Machines of several types are adaptable to drainage ditch repairs in the Mississippi Valley. By H. P. Whitney. 4 ills. 1,000 words. The Contractor. Oct. 26. 10 cts.

Extensive Use of Concrete Drain Tile By R. O. Hollister. 1,500 words. The Cement Era. Oct. 20 cts.

Levee Construction and Electric Pumping for Reclamation Project. Electrically operated hydraulic dredge and electric pumping station. 4 ills. 2,000 words. Electric Review. Oct. 20. 10 cts.

Hydrated Lime in Drain Tile. By Bela Nagy. 500 words. Concrete. Oct. 20 cts.

Manholes:

Drop Manholes for Sewers. Conditions for which required and characteristics desirable. Open, recess, pipe, channel, cascade and ramp drops. 3 ills. 1,600 words. Municipal Journal. Oct. 18. 10 cts.

Sanitation:

The Practical Application of Modern Sanitation. From address by F. G. Holmes. 3,000 words. The Surveyor. Sept. 21. 40 cts.

Sewers:

Excluding Gasoline from Sewers. Experience in New York. 500 words. Municipal Journal. Oct. 11. 10 cts.

Richmond Constructs Immense Combined Sewer. More than half the city will be served by reinforced concrete sewer 2 miles long. Some heavy roof work required. By C. E. Bolling, City Engineer. 7 ills. 1,000 words. Engineering News-Record. Oct. 4. 15 cts.

Trench Pressures Upon Sewer Pipe. 200 words. Engineering and Contracting. Oct. 10. 10 cts.

Mimico and New Toronto Joint Sewerage System. Details of a combined sewerage system that serves two cities. Basis of agreement. Brush wood used as filtering media. Description of pumping equipment and sewage filtering apparatus. 9 ills. 1,500 words. Canadian Engineer. Sept. 27. 15 cts.

Treatment:

To Meet State Laws Austin Proposes Thoroughgoing Sewage Works. Automatically controlled pumps, Imhoff tanks, sludge-drying beds, four dosing tanks, trickling filters and liquid-chlorine disinfecting apparatus are included in design. By John H. Gregory. 4 ills. 3,000 words. Engineering News-Record. Oct. 18. 15 cts.

Sewage Disposal at Sheffield. Efficient treatment with primary system of filtration. 1,500 words. The Surveyor. Oct. 12. 40 cts.

WATER SUPPLY.

Accounting:

Some Notes on Deficiencies in Water Accounts. From a paper by C. G. Henzell, Waterworks Engineer, Leeds. 4,000 words. The Surveyor. Oct. 12. 40 cts.

Associations:

Municipal Waterworks Association. Report of sixth annual meeting held at London. 6,000 words. The Surveyor. Oct. 12. 40 cts.

Construction:

The Cost of Laying Water Mains. Detailed figures of costs in Saginaw and Chicago. Pipe, lead, labor, cartage, etc. 2 pages. Municipal Journal. Oct. 4. 10 cts.

Methods and Cost of Constructing a Forty-eight-Inch Submerged River Crossing at Minneapolis, Minn. 2,400 words. Engineering and Contracting. Oct. 10. 10 cts.

Method and Cost of Rebuilding Filter Beds at Cincinnati Filtration Plant. 1,600 words. Engineering and Contracting. Oct. 10. 10 cts.

Laying Steel Water Main in St. Louis. Thirty-six inch pipe line delivering direct from pumping station to low service reservoir. Machinery used for excavating and backfilling. Detailed cost of work. Machine trenching at house services. By W. E. Hardenburg. 4 ills. 1,700 words. Municipal Journal. Oct. 11. 10 cts.

Extensive Waterworks Reconstruction at Wheaton, Ill. 4 ills. 1,100 words. Municipal Engineering. Oct. 25 cts.

Year Saved by Using Excavated Rock to Line Tunnel. Pneumatic concrete plants and use of stone secured from tunnel makes progress rapid in Chicago water tunnel. 1,500 words. Engineering News-Record. Oct. 4. 15 cts.

Electrolysis:

Electrolysis in Underground Water Pipes. From a paper by J. W. Ivy. 3,200 words. Canadian Engineer. Oct. 11. 15 cts.

Filtration:

Rapid Sand Filtration Recommended for Catskill Water Supply. 1,000 words. Engineering News-Record. Oct. 25. 15 cts.

Flow:

Effect of Mouthpieces on Flow of Water Through Submerged Short Pipe. 800 words. Engineering and Contracting. Oct. 10. 10 cts.

Joints:

Experiences with Leadite Joints at Windsor, Conn. 700 words. Engineering and Contracting. Oct. 10. 10 cts.

Miscellaneous:

Reducing the Peak Load by a Remotely Controlled Water Works Pumping Unit. 2 ills. 1,000 words. Engineering and Contracting. Oct. 10. 10 cts.

Cement Gun Seals Well Against Seepage of Ground Water. 1 ill. 500 words. Engineering and Contracting. Oct. 10. 10 cts.

Recovering Irrigation Water. Los Angeles constructs long infiltration gallery in river bed. Novel method of constructing reinforced concrete conduit and gallery. By C. W. Geiger. 3 ills. 1,500 words. Municipal Journal. Oct. 18. 10 cts.

Burning Off a Standpipe. 2 ills. 200 words. Municipal Journal. Oct. 25. 10 cts.

Operation:

Methods Used at Cincinnati Filtration Plant for Isolating and Identifying Bacillus Coli. 1 ill. 1,000 words. Engineering and Contracting. Oct. 10. 10 cts.

Pipes:

Use of Concrete Pipe for Underwater Pipe Lines. By Duncan Cameron. 800 words. The Cement Era. Oct. 20 cts.

Pipe Staves Creosoted Without Loss of Strength. Douglas fir treated at low temperature and given crushing test. Preservative does not give taste to water. By O. P. M. Goss. 1 ill. 1,800 words. Engineering News-Record. Oct. 4. 15 cts.

Prices:

Present Prices of Water Service Materials. 1,100 words. Engineering and Contracting. Oct. 31. 10 cts.

Reservoirs:

Reservoir and Standpipe Combined. Designs of an interesting structure at Hull, England, with 300,000 gals. capacity at ground and 100,000 gals. 60 feet high. By G. A. Couper. 1 ill. 1,600 words. Concrete. October. 20 cts.

Treatment:

Ultra Violet Sterilization at Henderson. Operating results in first municipal plant of the pressure type. 1,000 words. Municipal Journal. Oct. 4. 10 cts.

The Use of Copper Sulphate. Suggestions concerning its application to reservoirs to destroy algae. Prompt application is desirable. Relation to destruction of fish. 1,200 words. Municipal Journal. Oct. 4. 10 cts.

Valuation:

Purposes Should Govern Water Works Valuations. Original cost reproduction cost less depreciation and market value are all thought to have their applications. By J. W. Ledoux. 1 ill. 3,400 words. Engineering News-Record. Oct. 4. 15 cts.

A Discussion of the Fundamental Principles of Water Works Valuation. By J. W. Ledoux. 12,000 words. The Journal of the Engineers' Club of Philadelphia. October. 50 cts.

Reasonable Limits of Accuracy for Valuation of Water Utility Properties. By A. F. Brewer. 1,600 words. Engineering & Contracting. Oct. 10. 10 cts.

LIGHTING AND POWER.

Power:

Production of Electricity by Steam Power. Abstract of an address by Alex. Dow. 3,500 words. Electrical Review. October. 10 cts.

Traveling Water Screens for Condenser Intakes of Power Stations. Construction features. 12 ills. 5,000 words. Electrical Review. Oct. 25. 10 cts.

The Hazards of Domestic Electrical Appliances. From a paper by W. J. Canada. 7,000 words. National Fire Protection Association Quarterly. October. 50 cts.

The Pennsylvania Electric Code. By John P. Jackson. 27 pages. Journal of the Engineers' Club of Philadelphia. October. 50 cts.

Street Lighting:

Practical Features of Street-Lighting Contracts. Points to be observed in negotiations between municipalities and utilities with special attention to securing and maintaining the best public relations. By James R. Cravath. 5,000 words. Electrical World. Oct. 13. 10 cts.

Redding's New Lighting System. Described in a paper presented by E. A. Rolison, City Electrician. 800 words. Good Roads. Oct. 13. 10 cts.

Concrete in Street Lighting Field. Describes concrete posts and standards. By Arthur J. Sweet. 2 ills. 1,100 words. Cement & Engineering News. October 20 cts.

FIRE.

New Britain Fire Department Undermanned. Report of National Board of Fire Underwriters. 600 words. Fireman's Herald. Oct. 27. 5 cts.

High Pressure Fire Protection System of Toledo, Ohio. 1 ill. 1,000 words. Engineering and Contracting. Oct. 10. 10 cts.

The Drill School and Drill Tower of the Hartford Fire Department. 1 ill. 1,000 words. Fire and Water Engineering. Oct. 31. 10 cts.

Fire Protection in a large Manufacturing Plant. Protective equipment and methods of the General Electric Company's Schenectady Plant. 8 ills. 1,200 words. Fire and Water Engineering. Oct. 31. 10 cts.

How the Conflagration Hazard May Be Reduced. Some explanations of the causes of fires and suggestions as to reduction of the present large losses. From a paper by F. H. Wentworth. 2,500 words. Fire and Water Engineering. Oct. 31. 10 cts.

MOTOR VEHICLES.

Improving Electric Vehicle Performance During Winter. Use of anti-skid devices may save delays. Inherent cold-weather reduction of battery capacity may readily be largely overcome. By Kennedy Rutherford. 3,000 words. Electrical Review. Oct. 25. 10 cts.

Municipal Motor Vehicles. Cost and work done by electricians in Nottingham and Newcastle. 1,000 words. The Surveyor. Sept. 7. 40 cts.

Studs on Traction Engine Wheels. Information from four road surveyors of England. 1,000 words. The Surveyor. Aug. 31. 40 cts.

Poor Economy in Towing Horse Wagons. Trailers are more satisfactory. 2 ills. 1,000 words. Better Roads and Streets. Oct. 15 cts.

Compressed Coal Gas for Motor Lorries. Results of the recent experiments in Glasgow. 2,500 words. The Surveyor. Sept. 7. 40 cts.

Steel Motor Truck Bodies for Every Purpose. Two main types with many variations for all sorts of work are offered. 9 ills. 1,500 words. The Commercial Vehicle. Oct. 15. 20 cts

STREET CLEANING AND REFUSE DISPOSAL.

Refuse:

Toronto Incinerator Exceeds Burning Capacity Guarantee by 133 Per Cent. Description of plant and result of test. 2,200 words. Municipal Engineering. Oct. 25 cts.

War-Time Economy at Horsforth. How refuse is utilized; using flue dust as a disinfectant; utilizing waste paper. 1,100 words. The Surveyor. Oct. 12. 40 cts.

Collection and Disposal of Refuse and Nightsoil in Singapore. Description of conditions and of kinds of refuse collected. Tools and appliances; system of collecting and disposing. By W. K. Symonds, Conservancy Supt. 4,000 words. The Surveyor. Sept. 7. 40 cts.

Camp Wastes Yield Large Revenue to the Government. Plan under which garbage and other wastes at nineteen camps have been sold. 1,500 words. Engineering News-Record. Oct. 18. 15 cts.

Snow Removal:

Proposed Plan of Cooperation in Snow Removal in New York City. 800 words. Good Roads. Oct. 13. 10 cts.

Street Cleaning:

Philadelphia Street Cleaning. By F. C. Perkins. 3 ills. 1,500 words. Better Roads and Streets. Oct. 15 cts.

Cleansing Work in Glasgow. Cost of operating street sweeping machine. 300 words. The Surveyor. Sept. 21. 40 cts.

Cost of Street Cleaning at San Diego, with Vacuum Cleaners. 400 words. Engineering and Contracting. Oct. 3. 10 cts.

Ottawa Scavenging Wagons. Description of special type adopted. 3 ills. 800 words. Canadian Engineer. Oct. 25. 15 cts.

BRIDGES AND DAMS.

Economics of Bridge Design. From a lecture by J. A. L. Waddell. 4,000 words. Canadian Engineer. Oct. 11. 15 cts

Old Steel Spans Used for Traffic and Working Platform During Construction of Arch Bridge Beneath. By R. W. Gearhart, Highway Engineer, Buchanan County, Ia. 5 ills. 1,600 words. Engineering and Contracting. Oct. 24. 10 cts.

Fills Versus Viaducts for City Streets. Comparative costs of various types of structures. From a paper by R. E. Cushman. 1 ills. 3,000 words. Engineering and Contracting. Oct. 24. 10 cts.

Multiple Arch Dam Design. The most practical and economical span is about 40 feet and all spans should be the same. By L. Jorgensen. 3 ills. 2,200 words. Canadian Engineer. Oct. 4. 15 cts.

CITY PLANNING.

The Housing Problem and its Economic Solution. State assistance to private enterprises in house building after the war. 4,000 words. The Surveyor. Sept. 7. 40 cts.

Scottish Housing. The report of the Royal Commission and its recommendation. 4,000 words. The Surveyor. Oct. 12. 40 cts.

GOVERNMENT AND FINANCE.

Non-Assessable Property and Street Improvements. Discussion in a paper by M. B. Cowden, City Engineer of Harrisburg, Pa. 600 words. Engineering & Contracting. Oct. 3. 10 cts.

The Cleveland Plan for Assessing Repaving Costs. 500 words. Engineering and Contracting. Oct. 3. 10 cts.

Accounting in Municipalities. From an address by D. C. Scribner. 4,000 words. Pacific Municipalities. Oct. 25 cts.

The Commission Form of Government for Counties. From an address by N. W. Durham. 1,500 words. Good Roads. Oct. 6. 10 cts.

Police Power Over and Control of Streets. By W. P. Butcher. 2,000 words. Pacific Municipalities. Oct. 25 cts.

Cooperative Buying of Road and Bridge Material by Iowa Counties. Cooperative buying under standard specifications is contemplated by supervisors of 99 Iowa counties. 1,500 words. Engineering and Contracting. Oct. 3. 10 cts.

Centralized Engineering Succeeds in Wisconsin. A dozen scattered state engineering bureaus were consolidated under a state engineer in 1915. Dual control of bureaus practicable. By S. J. Williams. 2,500 words. Engineering News-Record. Oct. 25. 15 cts.

Comparisons of Various By-Laws Covering Flat Slab Concrete Buildings, with Actual Tests. Codes compared give fair-

ly similar results under actual conditions and when reduced to a common basis. Tests made on the Wm. Davies Building, Toronto. By W. W. Pearce, City Architect and Superintendent of Buildings. 10 ills. 3,000 words. Canadian Engineer. Oct. 18. 15 cts.

MATERIALS OF CONSTRUCTION.

Economical Proportions for Portland Cement Mortars and Concrete. Eight conclusions reached. From a paper before the American Society for Testing materials. By J. A. Kitts. 3 ills. 2,000 words. Canadian Engineer. Oct. 4. 15 cts.

Plain Concrete in Sea Water Must Be Protected Against Abrasion. Hard concrete surface is a carbonate which is safe from sea water attack. Softer interior with lime hydroxide is readily dissolved if exposed. By R. J. Wig and L. R. Ferguson. 10 ills. 3,000 words. Engineering News-Record. Oct. 4. 15 cts.

Reinforced Concrete in Sea Water Fails from Corroded Steel. Percolation of salt water or salt air to reinforcing steel causes rusting and failure. Remedies are difficult to find. By R. J. Wig and L. R. Ferguson. 7 ills. 4,500 words. Engineering News-Record. Oct. 11. 15 cts.

Selection of Material for Sea Water Concrete. Any standard portland cement may be considered safe as may also sea water gaging. Great care should be exercised in choosing aggregates. By R. J. Wig and L. R. Ferguson. 5 ills. 3,500 words. Engineering News-Record. Oct. 18. 15 cts.

Good Workmanship Necessary to Make Sea Water Concrete Safe. Correct proportions, judicious use of water, tight forms, a good contractor and efficient inspection are needed to bring concrete to proper condition to resist sea water action. By Rudolph J. Wig and Lewis R. Ferguson. 6 ills. 4,000 words. Engineering News-Record. Oct. 25. 15 cts.

Solving the Cracking Problem. Valuable discussions on the prevention and removal of hair checks in concrete construction. By Harvey Whipple. 8,000 words. Concrete. October. 20 cts.

Precautionary Measures for Concreting in Freezing Weather. By J. A. Stallfort. 2,000 words. The Cement Era. October. 20 cts.

Eight Men Tend Twin Mixer Plant. Thirty to forty yards of concrete put in forms every hour by ten men. Counterweight chute hung from main guy. 5 ills. 1,200 words. The Contractor. Oct. 26. 10 cts.

Notable Concrete Swimming Pools in California. By H. F. Stoll. 7 ills. 2,000 words. The Cement Era. Oct. 20 cts.

MISCELLANEOUS.

The Law in Regard to the Culverting of Streams. Decisions in England in regard to damages caused by constructing private culverts. 1 ill. 3,000 words. The Surveyor. Sept. 7. 40 cts.

Notes on Prepared Paints for Metal Surfaces. From a paper by H. A. Gardner. 2,000 words. Engineering and Contracting. Oct. 24. 10 cts.

Detinning. The Wadsworth installation. 1 ill. 200 words. The Surveyor. Oct. 12. 40 cts.

Effect of the War on Enrollment in Civil Engineering Departments of American Colleges. 2 pages. Engineering & Contracting. Oct. 31. 10 cts.

Public Abattoirs. From a paper by R. L. Honey. 3,000 words. The Surveyor. Oct. 5. 40 cts.

Building Prices on Public Work During Past Two Months. Contractors' figures on construction undertakings in various sections of the United States. 12,000 words. Engineering & Contracting. Oct. 31. 10 cts.

Dayton Flood Protection Essentially a Machinery Job. Will cost \$10,000,000. Five earth dams and seven channel sections included. 1,500 words. The Contractor. Oct. 26. 10 cts.

Specifications for Watertight Embankments Made by Three Different Processes. Specifications were drawn for the retarding reservoirs of the Dayton, Ohio, flood prevention project. 4,500 words. Engineering & Contracting. Oct. 17. 10 cts.

Special Features of the Miami Conservancy Contracts. Flood-prevention work to be placed under contract next month will cost \$10,000,000. Five earth dams and seven sections of channel included. 7 ills. 2,000 words. Engineering News-Record. Oct. 18. 15 cts.

(Continued on page 504)

NEWS OF THE SOCIETIES

Calendar of Meetings.

Nov. 14-16.—FIRE MARSHALS ASSOCIATION OF NORTH AMERICA. Annual convention, New Orleans, La. Secretary, W. M. Campbell, New Orleans, La.

Nov. 15-16.—ASSOCIATION OF URBAN UNIVERSITIES. Annual meeting, Pittsburgh, Pa. Secretary, Frederick B. Robinson, City College, New York, N. Y.

Nov. 19-20.—NATIONAL PAVING BRICK MANUFACTURERS ASSOCIATION. Conference of Paving Brick Industry, Cleveland, O. Secretary, Will P. Blair, Engineers Building, Cleveland, O.

Nov. 19-23.—AMERICAN PRISON ASSOCIATION. Annual Prison Congress, New Orleans, La. Secretary, Joseph P. Byers, 702 Empire Building, Philadelphia, Pa.

Nov. 19-24.—CITY MANAGERS' ASSOCIATION. Annual meeting, Detroit, Mich. Secretary, W. L. Miller, City Manager, St. Augustine, Fla.

Nov. 20-21.—ASSOCIATION OF GOVERNMENTAL RESEARCH AGENCIES. Third annual meeting, Detroit, Mich. Secretary, C. O. Dustin, Statistical Bureau, Red Cross War Council, Washington, D. C.

Nov. 20-23.—PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA. Recreation Congress. Secretary, H. S. Braucher, 1 Madison Ave., New York, N. Y.

Nov. 21-24.—NATIONAL MUNICIPAL LEAGUE. Twenty-third annual meeting, Hotel Statler, Detroit, Mich. Secretary, Clinton Rogers Woodruff, 703 North American Bldg., Philadelphia, Pa.

Nov. 25-Dec. 1.—ATLANTIC DEEPER WATERWAYS ASSOCIATION. Annual convention, Miami, Fla. Secretary, W. H. Schoff, Crozer Building, Philadelphia, Pa.

Dec. 4-6.—AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. Annual meeting, Richmond, Va. Acting secretary, H. M. Berry, Chapel Hill, N. C.

Dec. 26-29.—AMERICAN POLITICAL SCIENCE ASSOCIATION. Annual meeting, Philadelphia, Pa. Secretary, Clinton J. Swartz, Trenton, N. J.

Jan. 3, 4.—NEW JERSEY STATE LEAGUE OF MUNICIPALITIES. Annual convention, Trenton, N. J. Secretary, Clinton A. Swartz, Trenton, N. J.

Jan. 15-17.—VIRGINIA GOOD ROADS ASSOCIATION. Seventh annual convention, Richmond, Va. Secretary, C. B. Scott, Richmond, Va.

Feb. 6-13.—FIRST CHICAGO CEMENT MACHINERY AND BUILDING SHOW. Supersedes annual Chicago Cement Show. Held at the Coliseum, under direction of the National Exhibition Co.

March 17-24.—PAN-AMERICAN CONGRESS ON CHILD WELFARE. Montevideo, Uruguay. Secretary, Edward N. Clopper, 105 East 22d Street, New York, N. Y.

American Civic Association.

The American Civic Association opened its thirteenth annual convention at the Planters Hotel, St. Louis, Oct. 22, with an attendance of more than 200 delegates, representing about 100 American cities.

The convention was welcomed by John H. Gunlach, presiding officer; Lieutenant-Governor Wallace Crossley; Louis P. Aloe, president of the board of aldermen; J. Lionberger Davis, president of the chamber of commerce, and Miss Jessie L. Moller. Horace McFarland, president of the society, responded.

President J. L. Davis, of the St. Louis chamber of commerce, in welcoming the delegates, declared that many of those things which have been

believed in and hoped for are coming. He denied that there is any conflict between business and philanthropy or between commerce and civics, as all of these things which sometimes have been thought of separately go hand in hand. The best business men of today, he said, realize that their success rests upon sound community life.

Louis P. Aloe, president of the St. Louis board of aldermen, urged the delegates to analyze the city, give it credit where it is doing well, and tell it of its shortcomings in order that it might be helped in its struggles to become a better community in which to live.

President J. Horace McFarland, of Harrisburg, Pa., quoted President Wilson in one of his proclamations, that "war must not destroy civic efficiency." He suggested that this might well be used as a text throughout the country today.

Secretary Richard B. Watrous, of Washington, D. C., in his annual report, said there was no diminution of interest in the association, but on the other hand, there has been a gain in membership.

Dr. John Nolen, of Cambridge, Mass., with a stereopticon showed views of industrial housing in both American and English communities. One of these was of housing erected in England to accommodate munitions workers. These houses have been erected of a permanent character and after the war will be converted into cottages of an attractive type.

Difficulties surrounding the construction of cantonments for the national army and national guard were explained Tuesday by Maj. W. A. Starret, U. S. R., formerly a New York architect. Maj. Starret, who was graduated last summer from an Officers' Reserve Corps camp, illustrated his address with moving pictures of the various cantonments during construction.

Limited to a period of six weeks in which to build these camps, a majority of which were planned as permanent camps, Maj. Starret pointed out that the work presented obstacles that threatened to upset the government's entire plans. Labor and materials had to be hauled from different parts of the country to the camp sites, which in many instances consisted of farm lands under cultivation. Theoretical plans of the War Department for the arrangement of barracks and other details had to be abandoned at short notice, while the contractor and architect went on the field and drew their plans to conform to the situation.

Despite these handicaps and the fact that it was necessary to haul 50,000 carloads of materials half way across the continent to many of the camps, the buildings went up like magic, Maj. Starret related.

Huge storage depots, covering 400

acres and with sufficient trackage to accommodate 35 miles of cars, are contemplated by the government for eastern shipping points to relieve the present congestion due to shipments of supplies and ammunition to the troops abroad, said Maj. Starret. These depots will cost \$7,000,000.

Maj. Starret attended the convention by special permission of Secretary of War Baker.

The value of improved living conditions and social service work in large industrial centers was outlined by Miss Marguerite Walker Jordan, director of welfare work in the coal mining district around Fairmount, W. Va.

"Garden cities," consisting of model homes erected by large industrial concerns from special funds and rented to workers at a moderate rate, have enabled the wages earners in these districts to become thrifty and better workers, Miss Jordan pointed out.

"This plan of providing cheap and comfortable homes for the working classes," she continued, "must not have the slightest indication of philanthropy or charity on the part of the employer, or the workmen will not accept it. If the men feel they are paying a fair rental and that the employer is realizing a fair return on his investment, the former is satisfied. The plan is working successfully at Kistler, W. Va., where nearly 100 houses, each provided with a garden space, were erected amid beautiful surroundings for the employes of a brick plant."

The convention was presided over Tuesday by George B. Dealey, of Dallas, Tex. A luncheon was held at the City Club at noon and a tour of the city in automobiles was on the delegates' afternoon program.

The officers of the association were re-elected. They are: J. Horace McFarland, Harrisburg, Pa., president; Dr. John Nolen, Cambridge, Mass., vice president; Karl V. S. Howland, New York, treasurer, and Richard B. Watrous, Washington, D. C., secretary.

Wednesday a paper by Irving C. Norwood, secretary of the Greater Davenport (Iowa) Association, told of annual campaigns conducted there since 1913 for the improvement of home gardens and to induce the business section of the city to utilize window boxes. In 1913 not more than one home out of twenty had such gardens, but today not more than one out of twenty is without such gardens and beautiful lawns and the first year the business men responded with one and one-half miles of window boxes, which has increased each year. The co-operation of these 50,000 people has resulted in increased property values, a cleaner and healthier city, almost universal home ownership and it has been a potent factor in stimulating civic pride.

J. Horace McFarland, of Harrisburg, Pa., told of inviting the heads of the traction and electric power corporations to break bread with the civic

league of his town, and by persuasion inducing them to so locate their institutions that they would be most valuable to the citizenship and at the same time enhance the attractiveness of Harrisburg.

Professor F. N. Evans, of the University of Illinois, and Harold A. Caparn, of New York city, stressed the influence of environments, declaring that mental impressions moulded tastes and either militated against or served to improve individual and collective health of a city.

J. C. Nichols, of Kansas City, who has successfully promoted one of the largest suburban residential districts in America, emphasized the value of environments and illustrated his points with a number of concrete examples. He dwelt at considerable length upon the beneficent influence of properly applying the principles of city planning, and declared that if Kansas City had been as well planned as have the parks and boulevards, real estate would have been worth from 25 to 50 per cent more and investments could be made with better assurance that values would remain stable.

Prof. Frank A. Waugh, of the landscape department of the Massachusetts Agricultural College, who for six

months has been engaged in a survey of natural parks and resources for the government, enumerated the various benefits both to communities and individuals consequent upon the developing and preservation of natural heritages.

Practically all of the speakers advocated the establishment of a park in the Ozarks, it being the most acceptable plan to locate this park under the joint supervision of Arkansas and Missouri.

Milton Wend, of the Bureau of Standards, Washington, D. C., spoke on "Combining Economy with Beauty in Street Lighting." He told of the single standard street lights of the nation's capital, which have been largely copied throughout the country. For either the small or the large city he recommended the single light instead of the group or cluster system. The former, he said, looks better and from an economical standpoint has many advantages, as well as being more efficient. Fourteen feet should be the minimum for the height of street lights and sixteen feet is better. Less height than that would present a glaring effect upon the show windows and objects in the street, such

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PROBLEMS CITIES ARE STUDYING WITH EXPERTS

Grant county, Marion, Ind., has let contracts for the construction of a BRIDGE planned by Daniel B. Luten.

In making a number of STREET IMPROVEMENTS, Enterprise, Ala., has the consulting engineering services of Arthur Pew.

Riverdale, Ill., is constructing SEWERS, following the preparation of plans and specifications by the engineer, H. L. Emerson.

A VIADUCT to be constructed by Carbondale, Pa., is being planned by the consulting engineering firm of Peck Bros.

The Drainage District of Osage county, Quenemo Kan., is contemplating extensive DRAINAGE IMPROVEMENTS. The engineer to prepare plans and specifications is Clarke E. Jacoby.

A number of plans for the improvement of the municipal ELECTRIC LIGHTING SYSTEM of Grand Rapids, Mich., have been recommended by the city's consulting engineer, Prof. John C. Parker.

The city of Louisville, Ky., with the aid of a fund raised by the Woman's City Club, has had a thorough investigation of the REFUSE DISPOSAL PROBLEM made by the consulting engineer, Samuel A. Greeley.

A SEWAGE DISPOSAL PLANT and a PUMPING STATION are to be built by Stockton, Cal. Plans are in course of preparation by the consulting engineering firm of Haviland & Tibbitts.

Hopkins, Minn., is to construct a SEWER SYSTEM. Plans and specifications for the improvement were prepared by the engineer, J. F. Druar.

STREET IMPROVEMENTS are to be made by Rockport, Mo., following the preparation of plans and specifications by the engineers, Bruce & Standeven.

In extending its WATER MAINS, the village of Glenellyn, Ill., has the engineering services of Geo. A. Nelson.

Hennepin county, Minneapolis, Minn., has let a contract for ROAD IMPROVEMENT. The consulting engineers for the work were Hunt & Lewis.

The construction of a municipal ELECTRIC LIGHT PLANT is contemplated by Everett, Wash. The council has retained the consulting engineering firm of Burns & McDonnell to investigate and prepare plans.

The SEWAGE DISPOSAL PLANT of Salem, O., having proved inadequate and inefficient in operation, the city has engaged the W. J. Sherman company as consulting engineers to investigate conditions and report on necessary improvements.

Extensive PAVING IMPROVEMENTS, including reinforced concrete, are to be made by the city of Wyandotte, Mich. Mason L. Brown & Sons have been retained as consulting engineers to draw up plans and specifications.

PERSONALS

Clarke, Arthur, has been appointed chief of the Camas, Wash., fire department.

Hemphill, H. D., has been appointed chief of the Coleman, Tex., fire department.

Hurd, E. C., has been appointed city engineer of Havelock, Neb., succeeding L. S. Biddlecom, who resigned recently.

Parker, W. E., is now superintendent of the city street department of Anniston, Ala., succeeding Sam Smith, who is retained as first assistant to Mr. Parker.

Risley, S. J., has been appointed chief of the Huntingdon Park, Cal., fire department.

Wagner, G. J., was recently appointed city engineer of Grand Rapids, Mich.

Windrow, R. J., former County Engineer of McLennan County, Texas, has been appointed by Governor Hobby as a member of the State Board of Water Engineers, succeeding James C. Nagle, who resigned recently.

The following mayors have been elected in cities in New York state:

Albany—James R. Watt.
Amsterdam—Seely Conover.
Auburn—Mark L. Koon.
Binghamton—Harry C. Walker.
Buffalo—George S. Buck.
Canandaigua—Fred H. Partridge.
Cohoes—J. S. Calkins.
Corning—George W. Lane.
Dunkirk—James S. Pierce.
Elmira—Harry M. Hoffman.
Fulton—Victor C. Lewis.
Geneva—Reuben H. Gulvin.
Gloversville—Abram Baird.
Hornell—Edward J. Davis.
Ithaca—Frank B. Davis.
Johnstown—Clarence W. Smith.
Kingston—Palmer Canfield, jr.
Lackawanna—John A. Toomey.
Little Falls—Abraham Zoller.
Middletown—Rosslyn M. Cox.
Mount Vernon—Edward F. Brush.
New Rochelle—Fred H. Waldorf.
Olean—Foster Studholme.
Oneida—Ralph Munson.
Oneonta—Andrew E. Cepperley.
Oswego—John Fitzgibbons.
Plattsburgh—Charles A. Barnard.
Port Jervis—Peter C. Rutan.
Poughkeepsie—Ralph F. Butts.
Rochester—H. H. Edgerton.
Rome—H. Clayton Midlam.
Salamanca—Emmet E. Warn.
Saratoga Springs—Harry Pettee.
Schenectady—Charles A. Simon.
Syracuse—Walter R. Stone.
Tonawanda—Fred Koehn.
Troy—C. F. Burns.
Utica—James D. Smith.
Watertown—Isaac R. Breen.
Watervliet—Edward W. Joslin.
White Plains—William Weise.
Yonkers—William J. Wallin, jr.

Euston, Pa.—The following city councilmen were elected for 2 years: Dr. Charles Collmar, Dr. B. Rush Field, W. P. Strickland and Fred L. Mebus.

INDUSTRIAL NEWS

Cast Iron Pipe.—Prices remain at the same level after the big drop on all sizes recently announced. Business, however, is dull. Quotations: Chicago, 4-inch, class B and heavier, \$53.50; 6-inch, \$50.50. New York, 4-inch, class B and heavier, \$59.50; 6-inch, \$56.50. Birmingham, 4-inch, class B and heavier, \$48; 6-inch, \$45; class A, \$1 extra, all sizes.

The Lee Loader & Body Co., 2343-2350 South La Salle street, Chicago, Ill., has issued some new pamphlets describing and illustrating its line of bodies and auxiliary equipment for motor trucks, including side dumping bodies, end dumping bodies, three-way dumping bodies, asphalt outfits, garbage bodies, section dump bodies, industrial trucks, trailers and semi-trailers, wagon and truck loaders, etc. This literature should prove very suggestive to progressive contractors and public works officials who are seeking to cut down costs and increase efficiency in hauling and handling materials.

The American-La France Fire Engine Co., Elmira, N. Y., has recently received the following orders: Alexandria, Minn., 1 type 40 comb. with Junior pump; Cambridge, Mass., 1 type 12 pumping engine; Duluth, Minn., 1 type 12 pumping engine; El Segundo, Cal., 1 type 12 chemical engine; Glace Bay, N. S., 1 type 12 combination, with Junior pump; Hagerstown, Md., 1 type 31 steamer tractor; Jersey City, N. J., 1 type 31, 75-ft. aerial truck; Nahant, Mass., 1 type 75 pumping engine; Oneonta, N. Y., 1 type 14 combination service truck; Riverside, Cal., 1 type 75 pumping engine; St. Louis, Mo., 2 type 12 pumping engines; Santiago, Chile, 1 type 75 pumping engine; Schenectady, N. Y., 1 type 40 combination with Junior pump; South Manchester, Conn., 1 type 75 combination with Junior pump; Union, N. J., 2 type 12 pumping engines; Port Sheridan, Ill., 1 type 40 combination with Junior pump; Tenafly, N. J., 2 type 75 pumping engines; Vancouver, B. C., 1 type 12 pumping engine; Wausau, Wis., 1 type 75 pumping engine; Monaca, Pa., 1 Brockway combination chemical engine and hose car; Fort Henry, N. Y., 1 Brockway combination chemical engine and hose car; Brigham City, Utah, 1 type 75 pumping engine; Kearny, N. J., 1 type 75 pumping engine; Pittsburgh, Kan., 1 type 40 combination; Portland, Ore., 6 type 12 pumping engines; St. Joseph, Mich., 1 type 40 combination with Junior pump; Santa Fe, N. M., 1 type 40 combination; Tokio, Japan, 2 type 40 pumping engines; Topeka, Kan., 1 type 40 combination; U. S. Government—Port Newark, Terminal, 1 type 12 pumping engine; U. S. Government—Panama Canal Zone, 1 type 75 pumping engine.

The Ingersoll-Rand Company, 11 Broadway, New York, N. Y., has issued three new pieces of literature: Form No. 3118, describing and illustrating compressors and vacuum pumps for the extraction of gasoline from natural gas; a leaflet, No. 858, announcing Bulletin 9024, describing steam condensing plants consisting of Beyer barometric counter-current condensers, Ingersoll-Rand dry air pumps and Cameron water pumps; and Form No. 850, describing a useful accessory, a pocket oil flask designed particularly for use by drill-runners and similar workmen. The flask weighs only 3½ ounces and has a capacity of one-third of a pint.

War Relief Instead of Holiday Cards.

The Universal Portland Cement Co., 210 South La Salle street, Chicago, Ill., has sent out a letter urging a movement started in Chicago for saving the several hundred thousand dollars usually spent for Christmas and New Year cards and contributing the money to the Red Cross, Y. M. C. A., or other war work. The following letter is being sent out:

"At this time of world war when money is so sorely needed to alleviate suffering, reduce hunger and care for the sick and wounded, it seems sheer waste to spend money for such unnecessary and unproductive things as holiday greeting cards.

"A number of companies and individuals, among them the undersigned, whose custom it has been to distribute such cards, have decided not to do so this year, but instead to contribute the money to war relief organizations, where it will perform some real service.

"As lack of time prevents a personal canvass of other steel producers and consumers, as well as business houses and banks in general, this form of letter is substituted, and it is hoped the sug-

gestions offered may meet with wide approval and be productive of generous results.

"Contributions should be sent direct (together with a copy of this circular, if desired) to The American Red Cross, the American Fund for French Wounded, or any other relief organization that may appeal to the giver."

The letter is signed by the following firms: Illinois Steel Co., Morden Frog & Crossing Co., American Steel & Wire Co., Universal Portland Cement Co., Lackawanna Steel Co., Carnegie Steel Co., Inland Steel Co., Chicago Railway Equipment Co., A. M. Castle & Co., the P. & M. Co., A. J. O'Leary & Son Co.

Haulage Costs Cut for Western Road Builders.

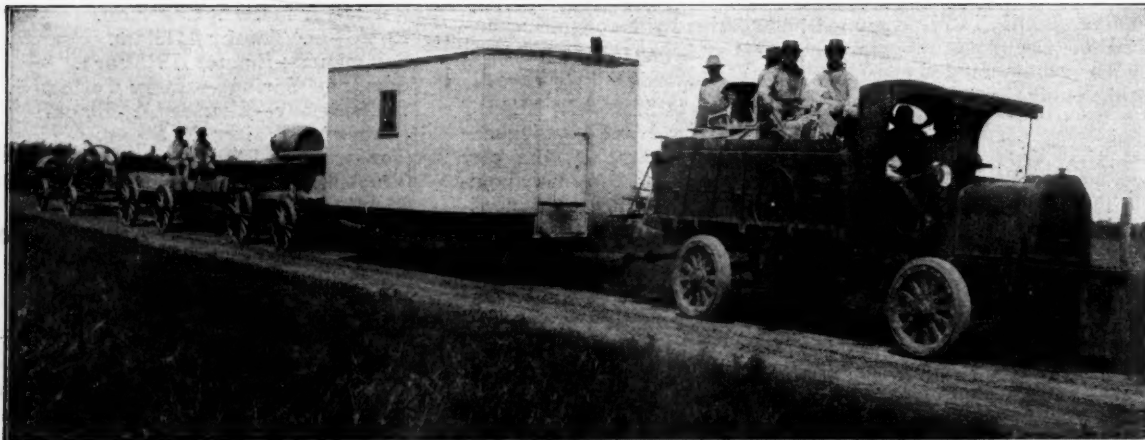
The accompanying illustration shows a Duplex truck, made by the **Duplex Truck Co.,** Lansing, Mich., in the service of the road commissioners of Black Hawk County, Ia. The commissioners estimate that the replacing of horse and mule teams with this 3½-ton, 4-wheel drive Duplex has cut down their haulage costs by almost a half. The Duplex is used for hauling gravel, bridge material and supplies for road building work. The photograph shows the Duplex hauling a load of gravel and tools, weighing 3,500 pounds, as well as pulling a bunkhouse weighing 5,500 pounds, tank wagon weighing 1,500 pounds, cement mixer weighing 1,500 pounds, and eight men on the truck and wagon weighing 1,200 pounds. The total weight of the vehicles and loads was 14,700 pounds.

NEWS OF THE SOCIETIES

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as traction cars, etc. The spacing should be about seventy-five feet.

Harold A. Caparn, of New York city, pleaded for better designing in the building of residences. Neighbors and the pedestrian, he declared, are interested in the next door house, because the owner usually sees its exterior only twice daily for a brief interval while entering or leaving, while others are compelled to view it for many hours each day. The owner, he continued, usually regulates his face and appearance with a view of pleasing those with whom he may come in con-



DUPLEX
TRUCK
USED ON
BLACK
HAWK
COUNTY,
IA.,
ROAD
WORK.

tact, but seldom thinks of his house with the same degree of consideration.

Tastes, Mr. Caparn declared, are molded by the things around a person. Mental development and happiness are affected by environment. Designs for all buildings, he concluded, should be submitted to an art jury.

By far the outstanding feature of the session was an address delivered at the last day by J. Horace McFarland, of Harrisburg, Pa., before some 300 members of the St. Louis Chamber of Commerce, who were hosts to the visiting delegates. He estimated the competitive opportunities existing there for recreation, which competition included the parks, playgrounds, churches and theaters as uplifting influences, opposed by saloons and dance halls as "down pulling" influences, and compared the total of these opportunities with the total demand for recreation. The figures he quoted definitely showed that the opportunities are woefully inadequate. He then logically traced the final result of bad recreational influences with their community expense, and convinced his audience that it would be better to invest in parks, playgrounds, summer and winter theaters, summer and winter baths, etc., than in jails, hospitals, correction farms, asylums, etc.

Mrs. T. P. Marshall, representing the Dallas Chamber of Commerce and Manufacturers' Association and the Texas Agricultural and Mechanical College, spoke of rural problems. She explained many of the causes which heretofore have induced boys and girls to leave the farms, and told of the community spirit that has developed in spots in the rural sections of Dallas county. So entertainingly did she expound her subject that by request of the audience she digressed upon other matters, and at the conclusion of her talk Secretary Watrous said that at some of the future conventions he hoped it would be possible to devote two or three days to country planning topics.

DeWitt McMurray, of Dallas, in a short impromptu address, also discussed rural problems, declaring that many of these are being solved through the educational work of the Agricultural and Mechanical College, the College of Industrial Arts and the country agents.

J. E. Surratt, of Sherman, paid a tribute to the progressive farmers of Texas, declaring that through their community and county fairs, the Texas Farmers' Congress and the various farmers' institutes they are broadening their horizon.

The afternoon session was devoted to discussing miscellaneous city problems. L. L. Leonard, of St. Louis, explained the ordinances in effect there to regulate billboards, which not only have been approved by the state and United States supreme courts, but the former even has formally declared that it is within the province of the city entirely to abolish billboards.

The solution of the smoke problem in Pittsburg was outlined by J. W. Hennessey, chief of the bureau of smoke regulation of that city. He showed that the lack of securing thorough combustion of fuels is costing the United States at least \$1,000,000,000 annually, which can be remedied at small expense.

Dr. Henry Gerling, assistant superintendent of public instruction of St. Louis, in an address declared that progressive educators are converts to the benefit of teaching civics in schools in order that their pupils may become well-rounded citizens.

American Public Health Association.

Hundreds of physicians and experts in public health matters were in attendance for the forty-fifth annual meeting of the American Public Health Association, which opened in Washington, Oct. 18 for discussion of medical topics, many of which relate to the war.

Herbert C. Hoover, United States Food Administrator, in an address before the memorial session, explained the problems confronting the nation from the food standpoint and asked co-operation of the doctors in making the campaign of economy successful. At no stage, the administrator said, did the Government want the health of the people jeopardized by lack of nutritious foods, and that was one of the reasons why the supply for domestic and army uses was to be looked after before filling the wants of the other nations.

Dr. W. A. Evans, of Chicago, president of the association, delivered an address at the evening session. Other addresses were by Gen. W. C. Gorgas, Surgeon General of the Army; Surgeon General Braisted, of the navy; Dr. Franklin H. Martin, chief of the medical commission, Council of National Defense, and Dr. W. H. Frost, director of the Red Cross bureau of sanitary service.

A greater need for efficient rural health administration was shown by statistics gathered from various sections of the country, read before the public health administration section, with recommendations that more intensive work for betterments be carried on. Administration under the state health district plan, also under the co-operative and local health plans, were discussed.

Allied with this work are the health problems of the war, and chief of them is that of venereal diseases, which is causing the army so much concern. The program adopted by the army and navy administrations for protection of men in cantonments originally to give the fighting forces a healthful chance, and secondary as a means of protecting the civilian population of the communities tributary to the cantonments.

Figures presented show the smallest percentage of this character of disease is with those of the Regular Army, and with the National Army

it is the greatest. The National Guard infections are slightly below that of the new army. Education along the proper lines in the opinion of Regular Army surgeons would do more to keep the army free from infection than all of the regulations or punishment.

A report on the army in Europe shows it to be in satisfactory condition as far as venereal troubles obtain, since practically all of the present infection was carried from these shores. More stringent regulations surrounding the points of embarkation were urged. No army in the world, it was related, has the high standard of moral protection that surrounds the army of America.

Greater need for a general system of sanitary supervision of the industries in times of war was urged by Dr. E. R. Hayhurst, of Columbus, Ohio, as a means of insuring a high standard of public health. While the army is absent, it is the more necessary that those behind the lines keep in health and produce commodities under healthful surroundings. Dr. Hayhurst pointed out that the Government could not afford to relax its vigilance behind the fighting lines owing to the theory of war being that the fighting lines must be kept supplied with healthful men. With this subject was discussed general measures for the prevention and control of industrial diseases in war industries, virtually including all lines of manufacturing for army uses, and the plan for co-operation of Federal and State authorities in bringing industries under sanitary conditions.

Community sanitation also was an important factor, but rests almost with the local authorities.

One of the interesting addresses of the convention was that of Colonel T. H. Goodwin, an eminent surgeon of the English army, on duty in this country, which dealt with the prevention of disease spread, and the preservation of health of the soldier on the western front, also an address by Major Pearce Bailey, of the United States Army, on mental diseases growing out of the war.

Addressing the association, Edward D. Rich, state sanitary engineer of Michigan, urged state supervision of garbage disposal as follows:

"Several of the states now have laws giving the state board of health supervision over sewerage systems and sewage disposal plants, which have been productive of much good in the elimination of nuisances and in protecting the public health by preventing the wholesale pollution of streams with untreated sewage.

"It would seem that a similar supervision over the collection and disposal of municipal refuse would result in valuable assistance to the locality in enabling it to solve its problems economically and in harmony with the best practice.

"For the collection of reliable infor-

mation it is necessary that regular reports be required from all municipalities, that such reports be made in standard form as prescribed by the state board of health, that they describe fully the methods used and that they contain accurate cost data.

"In order to see that sanitary principles may not be violated in carrying on the work the law should require that the methods to be adopted and the specific plans of procedure must receive the approval of the state board of health before the work is begun. The statute should also give the board power to order such changes in equipment, or methods as may be necessary to prevent nuisances or protect the public health or even to require the installation of an entire system if the local circumstances are such as to demonstrate its need.

In July, 1914, return postal cards were sent out to 210 municipalities in the state gathering the following information: Collection paid for by municipal tax, 32; garbage collected by private persons and the collector paid directly by patron, 21; collection covering entire city, 30; collection covering only part of city, 22; feeding swine, 9; feeding part to swine and burying remainder, 2; feeding part to swine and dumping remainder, 3; dumping on land, 12; burning on dump, 11; burial (including plowing it into the soil for fertilizer), 18.

"Fifty-one municipalities report frequently of collection as follows: Daily, 2; twice a week, 7; two or three times a week, 20; once a week, 11; every two weeks, 1; daily in business section, less frequently in residence, 4; once a week in residence, more often in business district, 2; once a week in winter, twice in summer, 3; once a week in business section, every two weeks in residence, 1.

Eight of the cities having municipal collection subsequently reported the percentage of population taking the service. The average of these eight is 60 per cent. Four cities having private collection reported an average of 28 per cent of the population taking the service.

"The above figures bear out a previous observation that it is a fact that only a very small portion of the families have their garbage removed when they are compelled to pay the collector directly, and that the collection of garbage is much more general when its cost is spread upon the tax roll."

Assistant Surgeon General John W. Trask of the United States public health service, told the convention that the work of the public health service in relation to the war was divided into three groups, protection of the health of the soldiers in this country, prevention of diseases being brought in by returning troop ships, and aid to the navy through quarantine stations and hospitals.

Health of the soldiers, Dr. Trask said, is protected by securing the best possible sanitary conditions and health administration in the territory surrounding the national army canton-

ments and national guard camps.

Facilities at the quarantine stations, particularly those on the Atlantic seaboard, are being increased to meet any emergency that may arise in connection with communicable diseases found on returning transports.

Illinois League of Municipalities.

The annual convention of the Illinois municipal league will be held at Urbana and Champaign Thursday and Friday, Dec. 6 and 7. The league, which is a continuation of the former mayor's association, has representatives on its membership of the larger cities, including Chicago, and small cities, towns and villages of Illinois.

The question of home rule is expected to be one of the principal topics to come before the convention.

Southern Appalachian Good Roads Association.

Asheville was selected for the 1918 meeting place of the Southern Appalachian good roads association at the annual meeting held at Nashville, Tenn., Oct. 18.

D. M. Clark of Greenville, N. C., was elected vice-president for North Carolina, and the following North Carolinians were elected as members of the executive committee: Dr. M. H. Fletcher of Asheville; W. S. Fallis, of Raleigh; and H. B. Varner of Lexington. The association went on record as favoring state and federal direction of trunk roads.

Connecticut Mayors' Association.

The annual meeting of the Connecticut mayors' association was held in Meriden Oct. 25, and these officers were elected:

President, Ernest Rogers, New London; vice-president, Dr. Joseph A. Cooke, Meriden; secretary-treasurer, Dr. J. M. Coburn, Norwalk; executive committee, George A. Quigley, New Britain; James Cray, Bristol, and Harold M. Meech, Middletown.

A dinner was held and the principal speaker was compensation commissioner George B. Chandler of Rocky Hill. The visitors enjoyed a theater party in the afternoon. A demonstration was later given of the city's new motor street sweeper and a new motor ambulance.

New Jersey Utilities Association.

The New Jersey Utilities Association held its third annual convention at the St. Charles Hotel, Atlantic City, on Oct. 26 and 27. Among the papers on the program were:

"The Proper Relations Between Public Utilities and Public Utility Commissions," Ralph E. Donges, president Board of Public Utility Commissioners of New Jersey; "The Problem of Higher Operating Costs and Commission Control of Rates," Thos. Conway, Jr., professor of finance, University of Pennsylvania; "Public Utilities Doing Their Bit," John L. O'Toole, Public Service Corporation, Newark; "Interrelation of Various Obligations for Adequate Utility Facili-

ties Under War Conditions," George W. Fuller, consulting engineer, New York; "The Financing of Public Utilities," T. H. Dudley Perkins of Bioren & Company, bankers, Philadelphia; "The Binding Force of Term Contracts with Special Relation to Public Utility Rates," Ralph J. Baker, Harrisburg, Pa.; "The Valuation of Intangibles for Rate-Making Purposes," Dr. F. Herbert Snow, chief engineer Public Service Commission of Pennsylvania; "Utility Troubles—Their Causes, Effects and Remedies," W. H. Roth, Philadelphia.

T. H. Dudley Perkins in his paper made the following suggestions on the subject of the financing of maturing obligations:

"In every community the Liberty Loan is given the right-of-way, and every patriotic banker devotes his time to promoting the public good by helping to place these bonds among his clients. The periods of rest between the placing of these loans are fully covered by such necessary financing as renewals of maturing obligations, thus eliminating the possibility of any new financing at this time. Indeed, the question of renewal of maturing obligations is in itself a most serious problem, and with each new piece of financing being done on a higher interest basis than the last it becomes a serious question whether the Government should not consider the advisability of extending the maturing obligations which have been made for a period of more than one year and the maturity of which is not provided by such installment payments as car trust rentals, etc., so that at least during the period of the war our public service corporations should not be embarrassed by this expensive and difficult operation."

MUNICIPAL INDEX

(Continued from page 499)

Miami River Improvement Contracts. Details of the itemized bids called for on 12 large contracts. Alternative and provisional bids arranged for. 2,700 words. Municipal Journal. Oct. 25. 10 cts.

Predict Labor Demand Before Job is Started. New use of progress charts make it possible to tell where and why actual work varies from estimate. By Dan Patch. 5 illus. 2,000 words. Engineering News-Record. Oct. 11. 15 cts.

Trackless Trolley at Bradford, England. 600 words. Municipal Journal. Oct. 18. 10 cts.

Suggestions on the Care of Street Department Horses. Advice in pamphlet issued by Street Cleaning Department of New York City. 2,600 words. Engineering & Contracting. Oct. 3. 10 cts.

Comparative Cost of Operating Automobiles and Teams on Irrigation Project. 1,750 words. Engineering & Contracting. Oct. 10. 10 cts.

Some Data on Depreciation in Value of Horses. Abstract from a bulletin issued recently by United States Department of Agriculture. 1,600 words. Engineering & Contracting. Oct. 17. 10 cts.

Lump Sum Versus Percentage Contracts. Discussion by Chas. Keefe, J. P. H. Perry and R. B. Melvin. 1,800 words. Concrete. Oct. 20 cts.

Denver's New Storage Yard Served by a Single 100-Ft. Derrick. Location of storage yard of street railway company reduces haulage and handling costs. Only three men required to handle work. By Edward A. West, Chief Engineer. 8 illus. 2,000 words. Electric Railway Journal. Oct. 27. 10 cts.